



PRELIMINARY ASSESSMENT REPORT

**MCC RECYCLING, LLP
PASADENA, HARRIS COUNTY, TEXAS
TXR000079409**



**Prepared in cooperation with the
U.S. Environmental Protection Agency, Region 6**

April 2011

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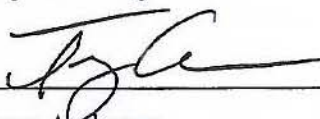
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4/7/11

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4/7/11

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Site Assessment Manager

4/11/11

Date

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**Prepared by:
Texas Commission on Environmental Quality
Austin, Texas**

2011

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NOTE

The State predecessor agencies: Texas Water Quality Board (TWQB), Texas Department of Water Resources (TDWR), Texas Water Commission (TWC), Texas Air Control Board (TACB) and Texas Natural Resources Conservation Commission (TNRCC) referred to throughout this report are now known as the Texas Commission on Environmental Quality. The new agency, TCEQ, became effective September 1, 2002, as mandated under State House Bill No. 2912 of the 77th Regular Legislative Session.

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List of Abbreviations and Acronyms

bgs	below ground surface
BOD	Biological Oxygen Demand
CERCLIS	Comprehensive Environmental Response Compensation and Liability Information System
CFR	Code of Federal Regulations
EPA	United States Environmental Protection Agency
FEMA	Federal Emergency Management Agency
IHW	Industrial and Hazardous Wastes
NPL	National Priorities List
PA	Preliminary Assessment
PCLs	Protective Concentration Levels
POTW	Publicly Owned Treatment Work
ppm	Parts Per Million
PPE	Probable Point of Entry
PWS	Public Water Supply
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
TRRP	Texas Risk Reduction Program
TSS	Total Suspended Solid
TDL	Target Distance Limit
TWDB	Texas Water Development Board
USOR	US Oil Recovery LP
VOC	Volatile Organic Compound
WWTP	Wastewater Treatment Plant

The Texas Commission on Environmental Quality (TCEQ) was tasked by the U.S. Environmental Protection Agency (EPA) Region 6 to conduct a Preliminary Assessment (PA) of the MCC Recycling, LLP site located in Pasadena, Harris County, Texas.

The goals for the PA are:

- Determine the potential threat to public health or the environment posed by the MCC Recycling site;
- Determine the potential for a release of hazardous constituents into the environment; and
- Determine the potential for placement of the site on the National Priorities List (NPL) under the Federal Superfund Program (Ref. 1 and 2).

Completion of the PA included reviewing existing site information, determining current site status, identifying possible sources of hazardous substances, identifying potential receptors, and determining off-site migratory pathways. This document includes a discussion of site background information (Section 2), a discussion of migration/exposure pathways and potential receptors (Section 3), a summary (Section 4), and a list of pertinent references (Section 5) (Ref. 3).

2.1 Site Location

Site Name: MCC Recycling, LLP
EPA ID No.: TXN000606990
Location: Pasadena, Harris County, Texas
Latitude: 29.714417° N
Longitude: 95.219997° W
Legal Description: Tracts 12A-1, 12C-1 & 12D-1 of Pasadena Outlot 28.
Congressional District: Texas 29th District
Site Owner: US Oil Recovery No 2 LLP
400 North Richey Street
Pasadena, Texas 77506
Site Contact: Klaus Genssler, President
400 North Richey Street
Pasadena, TX 77506

2.2 Site Description

The MCC Recycling, LLP (MCC) facility is located on two tracts of land at 200 North Richey Street, Pasadena, Harris County, Texas (Figure 2.1). Numerous concrete structures and a few small buildings are located at the facility. Most of these treatment works were left from a former public owned treatment works (POTW) wastewater treatment facility that operated at the site for approximately 60 years. Vince Bayou flows between the two parcels of land, with 2.9241-acres to the east of the bayou and 1.7760-acres to the west of the bayou. The portion of the site to the west of Vince Bayou is referred to as the west plant and the entrance is located along North Richey Street (Figure 2.2). The portion of the site to the east of Vince Bayou is referred to as the east plant and the entrance is located along West Richey Street (Figure 2.3). The site is completely enclosed by security fence and locked gates. A footbridge connects the east and west plants across Vince Bayou (Ref. 4, pp. 1-4, Ref. 5, p. 2, Ref. 6, p. 87).

The site is bordered as follows:

- West of the site are North Richey Street and a wastewater receiving station owned by Gulf Coast Waste Disposal Authority. Across North Richey Street to the west are commercial and industrial properties and a residential neighborhood (Ref. 7, p. 1);
- North of the site are a railroad track and a large underground utility easement (Ref. 7, p. 1);
- South of the site are West Richey Street and a residential neighborhood and commercial properties. The nearest residential property is located 195 feet south of the site. Memorial Park is located along Vince Bayou approximately $\frac{1}{4}$ mile to the south of the site (Ref. 7, p. 1);
- East of the site is a commercial property owned by MacDermid Offshore Solutions (Ref. 7, p. 1).

On February 6, 2009, MCC registered (TCEQ ID No. A85958 and EPA ID No. TXR000079409) with the TCEQ Used Oil Program as a used oil processor, used oil marketer who first claims used oil meets specifications, used oil marketer who directly

ships to burners, used oil filter storage facility, and used oil filter processor (Ref. 8, pp. 1-2, Ref. 9, pp. 1-2). MCC has not been registered as a receiver or generator of industrial waste (Ref. 10, p. 3).

MCC reportedly received and treated wastewater from US Oil Recovery, LLC (USOR) located at 400 N. Richey Street, Pasadena, Texas. The USOR facility was a centralized waste treatment and used oil recovery facility that processed and treated used oil, oily sludge and solids, and wastewater. USOR was also permitted to manage some hazardous and nonhazardous industrial solid wastes. After waste was initially processed and pretreated at USOR, it was sent to the MCC site for further treatment (Ref. 11, p. 4, Ref. 12, p. 1).

2.3 Ownership History

From approximately 1945 till January 2009, the property was owned by the City of Pasadena and used to treat municipal wastewater (Ref. 4, p. 2, Ref. 11, p. 4). The former POTW facility, known as the Vince Bayou Wastewater Treatment Plant, treated and discharged wastewater in compliance with a National Pollution Discharge Elimination System (NPDES) permit (discharge permit WQ10053-005) (Ref. 13, pp. 1-15).

In January 2004, the City of Pasadena completed construction of a new wastewater treatment plant and diverted inflow from the Vince Bayou Wastewater Treatment Plant to the new facility on January 16, 2004. The NPDES permit WQ0010053-005 was cancelled on May 28, 2004 (Ref. 14, p. 3).

On January 15, 2009, the property was purchased by US Oil Recovery No. 2 LLP (a subsidiary of US Oil Recovery, LP) and began operations as MCC. The company utilized many of the structures of the old wastewater treatment plant to treat oil and organic wastewater from the USOR facility. The new treatment facility was considered to be a pretreatment facility because it was not a POTW and it was not permitted for any surface discharge. MCC discharged treated wastewater to the City of Pasadena Little Vince Bayou WWTP until March 10, 2010, when it was ordered to stop site operations

by a Temporary Injunction from Harris County District Court (Ref. 10, p. 3, Ref. 15, pp. 1-6).

2.4 Operations and Waste Characteristics

Structures from the old municipal WWTP were converted by MCC into oily and organic wastewater treatment and storage units. As explained to TCEQ investigators, the intended treatment process for MCC was as follows (Ref. 5, p. 2):

- The site received piped in process wastewater from USOR. The wastewater was pumped up to the headworks of the MCC Recycling facility. Wastewater then flowed through an oil/water separator to recover any oil. The wastewater then flowed from the oil/water separator to a primary clarifier. More oil was recovered from the surface of the clarifier. Wastewater then flowed to the trickling filter. Wastewater then flowed to an aeration basin and alum was added as a flocculent. Wastewater from the aeration basin was then pumped to a clarifier where solids flock and float to the surface. The wastewater was then drained off and pumped to the designated sampling/discharge point (Ref. 5, p. 2).

2.4.1 Sources

All of the structures at the site that could hold wastewater or sludge (i.e. clarifiers, digesters, lift stations, sand filters, aeration basins, and chlorine contact chamber) currently contain liquid and/or solids and may be sources (Ref. 6, pp. 21-33). In October 2009, personnel from the Harris County Public Health and Environmental Services (HCPHES) sampled the liquid in digesters and clarifiers located on the east side of the site (Ref. 16, p. 6). In July 2010, the EPA sampled the liquid in numerous structures throughout the site (Ref. 12, p. 1, Ref. 17, p. 3). Subsequent analysis of the samples collected by the HCPHES and the EPA detected hazardous substances in many of the structures. These included the following:

- volatile organic compounds such as acetone, carbon disulfide, methyl acetate, 2-butanone, and 4-methyl-2-pentanone;
- semi-volatile organic compounds such as phenol, 2-methyl phenol, and 4-methyl phenol; and,

- metals such as arsenic, chromium, nickel, selenium, silver, and zinc.

(Ref. 16, pp. 16-19, Ref. 17, pp. 4, 6, 8, 12, 47, 53)

2.5 Previous Investigations

There have been numerous investigations of the site by the EPA, the TCEQ, and the HCPHES after MCC Recycling began operations in January 2009. These are listed and described below in chronological order.

TCEQ Investigations, May 18, 2009 through June 12, 2009

From May 18 to June 12, 2009, personnel from TCEQ made several investigations at the site because of five reported spills to Vince Bayou during the period from May 15, 2009 to June 8, 2009 as follows:

1. May 15, 2009 spill resulted in 500 gallons of wastewater entering the bayou;
2. May 20, 2009 spill resulted in 60 gallons of wastewater entering the bayou;
3. May 26, 2009 spill resulted in 50 gallons of wastewater entering the bayou.
4. May 28, 2009 spill resulted in 300 gallons of wastewater entering the bayou.
5. June 8, 2009 spill resulted in 30 gallons of wastewater entering the bayou.

Also on May 18, 2009, the TCEQ received a report of black water in Vince Bayou in the vicinity of the site. The TCEQ Emergency Response (ER) team performed a lengthy investigation and concluded that unauthorized discharges of wastewater to Vince Bayou had occurred from the site. The TCEQ determined that the frequency of the spills, lack of spill prevention or containment measures, and the unpermitted discharge indicated negligence by MCC. A Notice of Enforcement (NOE) was issued by TCEQ on August 3, 2009 due to the failure of MCC to prevent the unpermitted discharges and the failure of MCC to prevent submit a Baseline Monitoring Report (BMR) 90 days prior to discharging process wastewater to the TCEQ (Ref. 14, pp. 1-8).

HCPHES Investigation, May 29, 2009

On May 29, 2009, while investigating a spill at the MCC facility, personnel with the HCPHES discovered a seep occurring from the north bank of Vince Bayou at a point approximately 30 feet east of West Richey Street. The seep flow rate was estimated to

be five to fifteen gallons per minute and the source of the seep could not be determined. Although it was not known at the time, it was eventually determined on October 27, 2009 that the source of the seep was from MCC (Ref. 16, p. 1, 4-7).

TCEQ Investigation (#759454) May 29, 2009

On May 29, 2009, personnel with the TCEQ responded to release of approximately 3,000 gallons of industrial wastewater at the site. The discharge was from the sludge thickener tank and the cause of the release was undetermined. MCC reported that the waste contains high Total Suspended Solid (TSS), Biochemical Oxygen Demand (BOD), and possible metals. A berm was constructed at the bayou for containment purposes. A vacuum truck was dispatched to clear off the TSS from the water surface within the sludge thickener tank and prevent overflowing (Ref. 18, pp. 1-3).

TCEQ Investigation (#749279), June 08, 2009

On June 08, 2009, personnel with the TCEQ and HCPHES responded to a release of wastewater from the west side lift station that was flowing onto the ground and then entering Vince Bayou. The HCPHES investigator collected samples of the release. MCC employees stopped and contained the release and excavated soil that had been impacted by the release (Ref. 19, pp. 1-6).

TCEQ Investigation (#760182) June 3 and 12, 2009 On June 3 and 12, 2009, an investigator with the TCEQ Industrial and Hazardous Waste Program conducted a Compliance Investigation of the site. His findings resulted in a Notice of Enforcement (NOE), dated October 8, 2009, that alleged MCC failed to obtain authorization (a) prior to storing industrial wastewater and sludge from US Oil Recovery, and (b) prior to processing industrial wastewater received from US Oil Recovery. The NOE also stated that the facility does not have the permit required of commercial industrial solid waste facilities that receive industrial solid waste for discharge to a POTW. Additionally, MCC is not registered in the Solid Waste Program as a Receiver (Ref. 10, pp. 1-7).

TCEQ Investigation (#774997) August 17 and 20, 2009 and October 20, 2009

On August 17, 2009, after receiving a complaint about strong odors coming from the site, investigators from the TCEQ Air Quality Program conducted an odor survey of the site. The investigators detected a strong odor of hydrocarbons and sewage near the gate located along North Richey Street on the west side of the facility. The odor was strong enough to linger in the cabin of the state vehicle and on the clothes of the investigators. On August 20, 2009, TCEQ investigators conducted air sampling at the site using SUMMA canisters and a portable Multi-RAE to analyze the air samples for volatile organic compounds (VOCs). One sample was collected downwind of the secondary clarifier and trickling filter. There was a moderate odor (oily/solvent/sewage) at this location and the Multi-RAE detected a VOC level of 1.0 part per million (ppm). Another sample was collected downwind of the aeration basin. There was a moderate odor at this location and the Multi-RAE detected a VOC level of 0.3 - 0.7 ppm. On October 20, 2009, the TCEQ investigators returned to the site to check on odors at the site. The investigators detected very low levels of VOC/sludge odor on site. The investigation was concluded with no alleged violations (Ref. 20, pp. 1-5).

TCEQ Investigation (#768045) August 20, 2009

On August 20, 2009, an investigator with the TCEQ Water Quality Pretreatment Program conducted a Compliance Investigation at the site and found wastewater leaking to the ground from the trickling filter. The investigator also found that the facility had added an oil/water separator to the treatment headwork. The investigator also noted that sludge from USOR was still being stored in the chlorine contact chamber. As a result of this investigation, the facility was given notice on September 11, 2009 of several alleged violations. These included the following:

- Failure of MCC to provide formal notice that the wastewater treatment process had been changed; and
- Failure of MCC to prevent an unpermitted discharge of wastewater.

(Ref. 5, pp. 1-6)

TCEQ Investigation (#780194), September 02, 2009

On September 2, 2009, investigators with the TCEQ Air Quality Program conducted a routine surveillance of MCC. The investigators used a GasFindIR camera as well as a survey of the area for odor and visible emissions. Visible emissions were not observed. Although the investigators noted light wastewater odors, the odors were not strong enough to warrant a site visit (Ref. 21, pp. 1-3).

Agency for Toxic Substances and Disease Registry, Health Consultation, October 27, 2009

On October 27, 2009, the Agency for Toxic Substances and Disease Registry (ATSDR) issued a Health Consultation regarding MCC Recycling in response to a request for assistance related to the May 2009 discharge from MCC Recycling. The report summarized an EPA sampling event, in which the EPA collected and analyzed four surface soil samples and three sediment samples, and evaluated the results to determine if a public health hazard to recreational receptors exists. The Health Consultation concluded that exposure to arsenic, poly-aromatic hydrocarbons, total petroleum hydrocarbons, and other substances detected in the soil and sediment along the banks of Vince Bayou near the MCC facility does not pose a public health hazard to recreational receptors (Ref. 11, pp. 1-19).

HCPHES Investigation (ID 15233), October 23 through 29, 2009

From October 23 through 30, 2009 and November 06, 2009, HCPHES personnel investigated and documented a release of black colored liquid from MCC into Vince Bayou. The release had initially been discovered on May 29, 2009 as a seep from the north bank of Vince Bayou at a location approximately 30 feet east of North Richey Street. The release was rediscovered on October 23, 2009. After an investigation that included excavating the seep area, HCPHES personnel concluded that MCC was the source of liquid that was discharging from a break in an old 24-inch diameter concrete pipe. HCPHES personnel collected samples of the release and various tanks and a lift station at the facility. Subsequent analysis of the samples indicated similar concentrations of contaminants in the discharge and the various tanks. These included: carbon disulfide, methyl acetate, 2-butanone, benzene, 4-methyl-2-pentanone,

ethylbenzene, and xylenes. On October 29, 2010, the pipe was plugged and the release stopped (Ref. 16, pp. 2-9).

TCEQ Investigation (#795986), January 8 and 15, 2010

On January 08 and 15, 2010, an investigator with the TCEQ Water Quality Pretreatment Program conducted a Compliance Investigation at MCC and observed an unpermitted discharge into Vince Bayou. The investigator issued a violation to MCC due to failure to prevent the unauthorized discharge of wastewater into the waters of the State. The facility was alleged to be discharging wastewater from the old chlorine contact chamber flow measurement channel to Vince Bayou from two unpermitted outfalls (Ref. 22, pp. 2-3).

TCEQ Investigation (#828557), June 09, 2010 On June 09, 2010, investigators with the TCEQ Air Quality Program conducted a routine surveillance of the facility. The investigators used a GasFindIR camera as well as a survey of the area for odor and visible emissions. No odors were noticeable and no visible emissions were observed (Ref. 23, p. 2).

EPA Emergency Removal (ER) Action, July 1, 2010 to August 2, 2010

On July 1, 2010, the EPA initiated an ER action at USOR. On July 7, 2010, after a release at the MCC facility was reported to the National Spill Response Center by HCPHES and TCEQ, the EPA included ER actions at MCC with the USOR ER action. Both facilities appeared to be abandoned and recent rainfall events had caused releases into the bayou (Ref. 6, p. 43).

During ER activities, three releases were found at the site and remediated as follows:

- Oily liquid was discharging from the pump house onto the ground and into Vince Bayou. The release was stopped by plugging the pipes that were leaking (Ref. 6, pp. 21, 25, 53).
- The east plant lift station, also known as Lift Station #1, was discharging liquid onto the ground and into the bar ditch located along West Richey Street and then Vince Bayou. The release was stopped by pumping liquid from the lift station into a frac-tank (Ref. 6, pp. 53, 57, 59, 61, Ref. 12, p. 6).

- Liquid from the chlorine contact chamber was surfacing from cracks in a concrete road near the northwest corner of the chlorine contact chamber. The liquid was running across the concrete road, onto the ground, and into Vince Bayou near the northwest corner of the east plant. The release was stopped by pumping liquid from the chlorine contact chamber into frac-tanks (Ref. 6, pp. 27, 41, 45, 47, 51, Ref. 12, pp. 6, 12).

On July 29 and 30, 2010, the liquids were transported and disposed off-site at Intergulf (Ref. 12, p. 12).

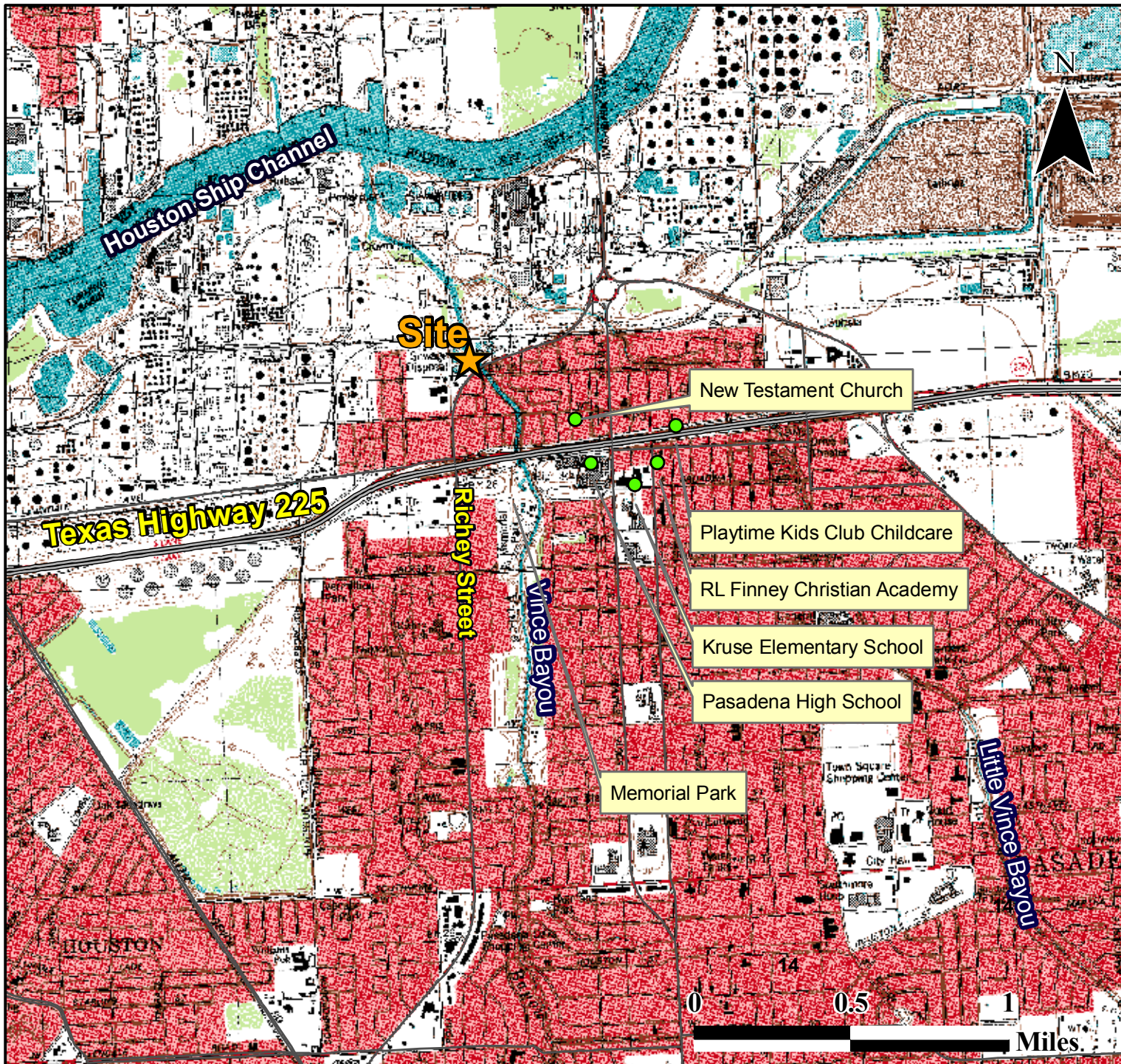
The EPA ER team collected samples from various structures located at the site. The sample locations on the west side included the High Rate Trickling Filter, Oil Water Separator, and Final Clarifier. The sample locations on the east side included the Pump Control Room, Oxygen Digester 2, Oxygen Digester 1, Clarifier #1, Clarifier #2, and Chlorine Contact Tank (Ref. 12, p. 9, Ref. 17, p. 3).

EPA Emergency Removal Action, November 9, 2010 through January 7, 2011

On November 9, 2010, EPA personnel returned for an additional emergency removal (ER) action at the USOR and MCC facilities. On January 4, 2011, TCEQ personnel visited the site and saw that the liquid level in the chlorine contact chamber (also known as the Z-tank) was above the level of the plugged hole near the former outfall structure. They saw a black-colored liquid with an oily sheen discharging from cracks in the concrete located near the hole and outside of the Z-tank. The black-colored liquid was running off onto the vegetated area located in the northwest corner of the east side of the facility. After receiving notification of this release, the EPA removed approximately 50,000 gallons of liquid from the Z-tank and patched the hole. These activities were completed on January 7, 2011 (Ref. 12, p. 24).

2.6 Site Visit

Personnel with the TCEQ Superfund Site Discovery and Assessment Program made numerous visits to the site from July 2010 through January 2011. Observations during these site visits are documented in field notes and photographs (Ref. 6, pp. 21-91).



**FIGURE 2.1: SITE LOCATION
MAP**

**MCC RECYCLING, LLP
200 NORTH RICHEY STREET
PASADENA, HARRIS COUNTY,
TEXAS**

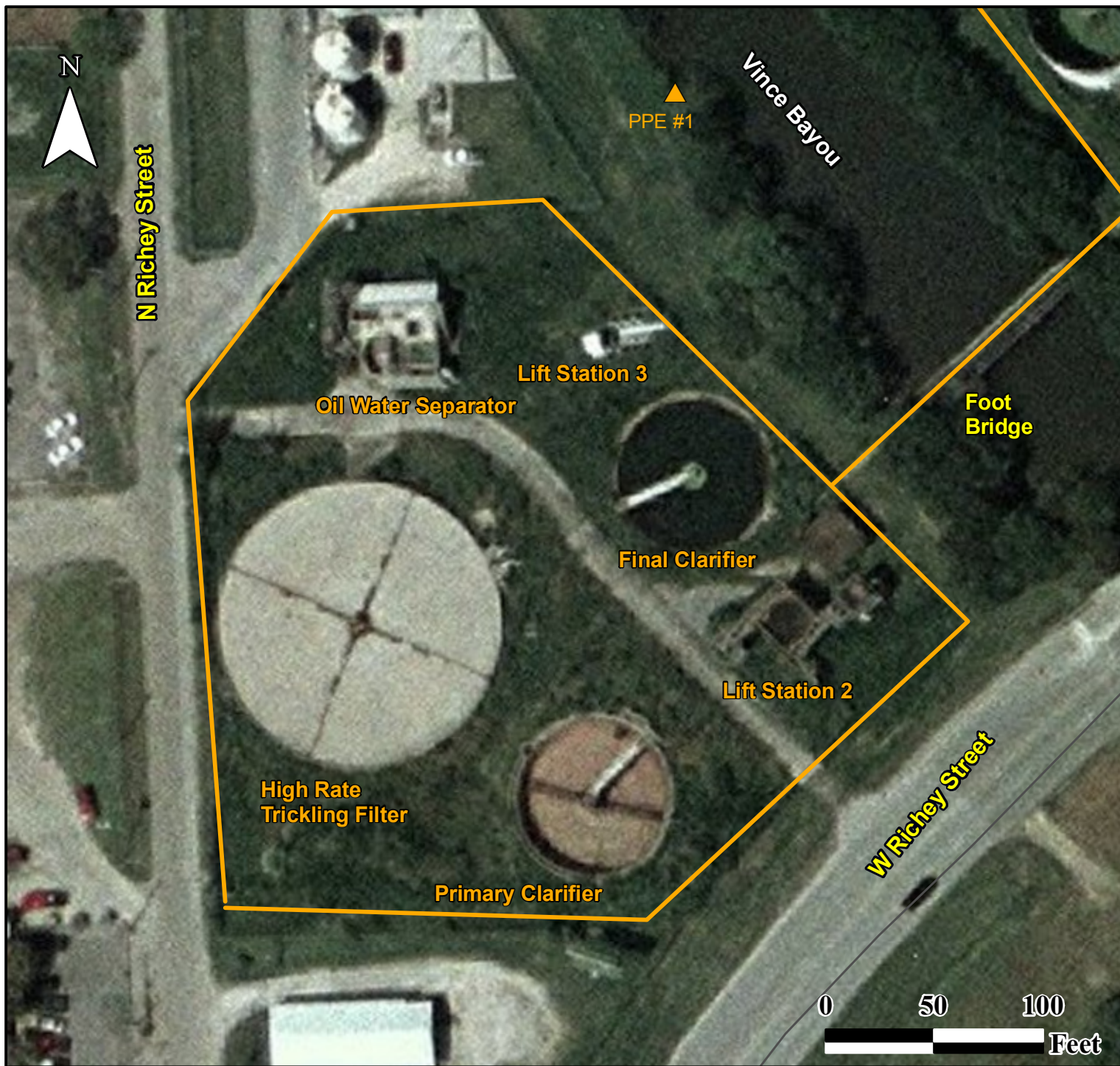
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 Residential Development



**HARRIS
COUNTY**

The base data used for this map is the U.S. Geological Survey Topographic Map : NAD1983, UTM Zone 15. This map was generated by the Remediation Division of the Texas Commission on Environmental Quality. It is intended for illustrative or information purposes, and is not suitable for legal, engineering or survey purposes. This map does not represent an on-the-ground survey conducted by or under the supervision of registered professional land surveyor. In cases where property boundaries are shown, it only represents their approximate relative location. No claims are made to the accuracy or completeness of the data or suitability for a particular use. For more information concerning the map, contact Remediation Division at 800-633-9363. Map created on 04/05/2011 by L. Tran.



**FIGURE 2.2: SITE FEATURE
MAP- WEST PLANT**

**MCC RECYCLING, LLP
200 NORTH RICHEY STREET
PASADENA, HARRIS COUNTY,
TEXAS**

TXR000079409

**▲ SURFACE WATER PATHWAY
PROBABLE POINT OF ENTRY
(PPE) LOCATION**



**HARRIS
COUNTY**

The base data used for this map is the 2007 National Agriculture Imagery Program (NAIP) aerial imagery of Harris County Projection: NAD1983, UTM Zone 15. This map was generated by the Remediation Division of the Texas Commission on Environmental Quality. It is intended for illustrative or information purposes, and is not suitable for legal, engineering or survey purposes. This map does not represent an on-the-ground survey conducted by or under the supervision of registered professional land surveyor. In cases where property boundaries are shown, it only represents their approximate relative location. No claims are made to the accuracy or completeness of the data or suitability for a particular use. For more information concerning the map, contact Remediation Division at 800-633-9363. Map created on 04/05/2011 by L. Tran.



**FIGURE 2.3: SITE FEATURE
MAP- EAST PLANT**

**MCC RECYCLING, LLP
200 NORTH RICHEY STREET
PASADENA, HARRIS COUNTY,
TEXAS**

TXR000079409

**▲ SURFACE WATER PATHWAY
PROBABLE POINT OF ENTRY
(PPE) LOCATION**



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3 MIGRATION/EXPOSURE PATHWAYS

The following sections describe migration/exposure pathways and potential targets within the site's range of influence.

3.1 Groundwater Migration Pathway

The target distance limit (TDL) for the groundwater migration pathway is a 4-mile radius that extends from the sources at the site.

3.1.1 Geologic Setting

The geologic formations found beneath the site, beginning at the surface and progressing downward to the top of the aquifer of concern and any interconnected aquifer(s), are:

Series	Formation
Pleistocene	Beaumont Clay, Montgomery Formation, Bentley Formation, Willis Sand
Pliocene	Goliad Sand
Miocene	Fleming Formation, Oakville Sandstone

These formations consist of a massive thickness of sediments that form a homocline sloping gently towards the Gulf of Mexico. These sediments were mainly deposited in the coastal plains of the Gulf of Mexico Basin under fluvial-deltaic to shallow marine environments during the Miocene and Pleistocene periods. Repeated sea-level changes and natural basin subsidence produced discontinuous beds of sand, silt, clay, and gravel (Ref. 24, p. 45).

The soil at the site is mostly comprised of the Lake Charles - Urban Land complex, which consists primarily of clay and has a total depth of 74 inches (Ref. 25, Sheet 105, p.19).

The average annual precipitation in the city of Pasadena, Texas is 53.96 inches (Ref. 26, p. 1).

3.1.2 Aquifer System

The site overlies the Gulf Coast aquifer, which consists of five hydrostratigraphic units, from youngest to oldest: the Chicot aquifer, the Evangeline aquifer, the Burkeville confining system, the Jasper aquifer, and the Catahoula confining system.

The Chicot aquifer includes the Beaumont Clay and extends through the Willis Sand. The Chicot aquifer is recognized for an abundance of water in Southeast Texas due to the high percentage of sand in the aquifer formations. The depth of the base of the Chicot aquifer is approximately 700 feet below the ground surface in the site area. Some of the Public Water System (PWS) wells in the site area are reportedly screened in this aquifer (Ref. 24, pp. 38-45, Ref. 27, p. 1).

The Evangeline aquifer is approximately 2,100 feet thick and underlies the Chicot aquifer, encompassing the entire thickness of the Tertiary-aged Goliad Formation sands (Ref. 24, pp. 38-45). The Chicot and Evangeline aquifers are geologically similar and the basis for separating them is primarily because they differ in hydraulic conductivity (Ref. 28, p. 10). The Evangeline aquifer is considered to be one of the most prolific aquifers of the Coastal Plain, yielding large quantities of good quality ground water. The top of the Evangeline aquifer is approximately 700 feet bgs in the site area. The base of the Evangeline aquifer is approximately 2,800 feet bgs in the site area. The deepest PWS wells in the vicinity of the site are screened in this aquifer (Ref. 24, pp. 38-45, Ref. 27, p. 1).

The Evangeline aquifer and the underlying Jasper aquifer are separated by the Burkeville Confining System, which consists of silt and clay strata and ranges from 300 to 400 feet

in thickness. The Jasper aquifer is the deepest confined water bearing unit in the Gulf Coast aquifer system in Texas and consists of the Fleming Formation and the Oakville Sandstone. The base of the Jasper aquifer is approximately 4,200 feet bgs in the site area (Ref. 24, pp. 38-42).

The Catahoula confining system underlies the Jasper aquifer and has an average thickness of 200 to 600 feet. The Catahoula Formation is composed of non-marine sands, clays, and volcano-clastic deposits interbedded with fluvial sediments (Ref. 24, pp. 38-45).

During most of the 20th century, the high rate of ground water removal from the Chicot and Evangeline aquifers in Harris County and surrounding counties caused water levels to dramatically fall in these aquifers. This problem caused land-surface subsidence problems and led to the use of surface water as the primary source of potable water in the area. In the mid-1970s, the cities of Houston and Pasadena converted most of their water sources to surface water from the San Jacinto and Trinity rivers (Ref. 24, pp. 140-142). Currently, the groundwater wells operated by the City of Pasadena are only used as an emergency supply and only produce approximately 1% of the total water supply (Ref. 29, p. 1).

3.1.3 Drinking Water Receptors

According to the Harris-Galveston Subsidence District, four domestic groundwater wells are located within the TDL. These wells range in depth from 120 to 660 feet bgs and withdraw groundwater from the Chicot aquifer (Ref. 30, pp. 1-10).

Twenty-three active PWS wells are located within the TDL (Figure 3.1). These wells range in depth from 325 to 1,967 feet bgs and withdraw groundwater from the Chicot and Evangeline aquifers. The nearest active PWS well is located approximately 0.67 miles northwest of the site and is owned by the Houston Refining PWS (#1011570 and Figure 3.1). A list of the PWS wells located within the TDL and the populations that they serve are found in Table 3.1 (Ref. 27, pp. 1-56).

Table 3.1 Public Water System Wells within the TDL

Distance (miles)	PWS #	PWS Name	Well ID	Aquifer	Depth (ft)	Population Served*
0.5-1	1011570	Houston Refining	G1011570C	Evangeline	1,226	1,000
	1011570	Houston Refining	G1011570D	Evangeline	1,844	1,000
1-2	1010009	City of Galena Park	G1010009A	Evangeline	680	10,592
	1010009	City of Galena Park	G1010009C	Evangeline	1,201	10,592
	1010293	City of Pasadena	G1010293A	Evangeline	1,264	144,174
	1011570	Houston Refining	G1011570B	Evangeline	1,192	1,000
2 – 3	1010009	City of Galena Park	G1010009D	Evangeline	975	10,592
	1010293	City of Pasadena	G1010293F	Chicot	1,565	144,174
	1010312	Chevron Phillips Pasadena Plastics	G1010312A	Evangeline	1,967	426
	1010312	Chevron Phillips Pasadena Plastics	G1010312B	Evangeline	1,220	426
	1010936	Agrifos Fertilizer Pasadena	G1010936A	Evangeline	1,230	198
	1013224	Galena Park ISD	G1013224A	Chicot	325	60
3 – 4	1010293	City of Pasadena	G1010293E	Evangeline	1,292	144,174
	1010293	City of Pasadena	G1010293B	Evangeline	1,269	144,174
	1010294	City of South Houston	G1010294A	Evangeline	1,203	13,116
	1010294	City of South Houston	G1010294B	Evangeline	1,210	13,116
	1010294	City of South Houston	G1010294D	Evangeline	1,305	13,116
	1010294	City of South Houston	G1010294E	Evangeline	1,415	13,116
	1011172	Albemarle Houston Plant	G1011172A	Chicot	476	775
	1011172	Albemarle Houston Plant	G1011172B	Evangeline	1,740	775
	1011172	Albemarle Houston Plant	G1011172D	Evangeline	1,252	755
	1011573	Georgia Gulf Chemicals & Vinyls PA	G1011573B	Chicot	490	65

* - Note that the listed population served is the total population served by the PWS and not the individual well. Also, note that surface water is also used as a source of water for the cities of Pasadena, Jacinto City, and Galena Park.

(Ref. 27, pp. 1-56)

3.2 Surface Water Migration Pathway

The surface water migration pathway TDL begins at the probable point of entry (PPE) of surface water runoff from the site to a surface water body and extends downstream for 15 miles.

3.2.1 Surface Water Migration Route

The property boundaries of MCC are located within 50 feet of Vince Bayou (Ref. 4, p. 1, Ref. 7, p. 1). Vince Bayou flows to the north and empties into the Houston Ship Channel. Vince Bayou and the Houston Ship Channel are both tidally-influenced water bodies (Ref. 31, p. 1, Ref. 32, p. 1).

The topographical slope across the west plant slopes to the east towards the bayou. The topographical slope across most of the east plant runs to the west towards the bayou. An area in the southeast corner of the east plant has topographical slope to the south towards a bar ditch located along West Richey Street that conveys storm water to Vince Bayou (Ref. 33, p. 1).

Two PPEs are identified at the site:

- PPE #1 – As shown in Figure 2.2, the point along Vince Bayou located northeast of Lift Station #3. PPE #1 represents the location where runoff from the west plant of MCC enters the bayou.
- PPE #2 – As shown in Figure 2.3, the point along Vince Bayou located west of the northwest corner of the east plant of MCC (near the railroad crossing). PPE #2 represents the location where runoff from the east plant of MCC enters the bayou.

From PPE #2, Vince Bayou flows north and enters the Houston Ship Channel approximately 0.7 mile downstream. Flow in the Houston Ship Channel is to the east, towards the Galveston Bay and the Gulf of Mexico. Approximately 11 miles downstream of the PPE, the Houston Ship Channel merges with the San Jacinto River. The 15-mile point downstream of PPE #2 is in the Houston Ship Channel/San Jacinto

River near the vicinity of Alexander Island. The 15-mile surface water migration route is shown in Figure 3.2 (Ref. 7, p. 1).

The site is located within the 100-year flood zone within a vulnerable to moderate flood hazard (Ref. 34, pp 1-2, Ref. 35, p. 1).

Additional investigation is on-going in relation to possible dioxin detections in the Houston Ship Channel.

3.2.2 Drinking Water Receptors

There are no surface water intakes for drinking water sources located along the 15-mile downstream segment (Ref. 36, p. 62).

3.2.3 Human Food Chain Receptors

The TCEQ has not designated any uses for the Vince Bayou and the Houston Ship Channel above the San Jacinto River. However, the TCEQ has designated the Houston Ship Channel/San Jacinto River for “Non-Contact Recreation” and aquatic life habitat uses (Ref. 36, p. 62).

Vince Bayou supports aquatic life and residents use the bayou for recreational activities that includes fishing (Ref. 11, p. 4, Ref. 7, p. 1). Personnel with the TCEQ have observed several people fishing in the Vince Bayou approximately 0.25 mile downstream of the PPE (Ref. 6, pp. 89, 160). Total human consumption of fish caught in Vince Bayou is unknown.

In 2001, due to the presence of organochlorine pesticides and PCBs at concentrations in samples of fish that pose a threat to human health, the Texas Department of Health issued a consumption advisory for the Houston Ship Channel and all its contiguous waters for all species of fish. The advisory recommended consuming no more than one meal, not to exceed eight ounces, each month for these species (Ref. 37, p. 1).

3.2.4 Environmental Receptors

Environmental receptors include wetlands and threatened or endangered species.

Estuarine unconsolidated bottom wetlands occur along Vince Bayou that flows through the site and estuarine emergent wetlands are located along Vince Bayou within a quarter mile of the site (Ref. 32, pp. 1-3).

Federally threatened or endangered species potentially located in Harris County include the Houston Toad, Mountain Plover, Red-Cockaded Woodpecker, Whooping Crane, Smalltooth Sawfish, Louisiana Black Bear, Red Wolf, Green Sea Turtle, Kemp's Ridley Sea Turtle, Leatherback Sea Turtle, Loggerhead Sea Turtle, and Texas Prairie Dawn (Ref. 38, pp. 1-6).

3.3 Soil Exposure Pathway

The soil exposure pathway is evaluated based on the threat to residents and nearby populations from soil contamination within the first two feet of the surface.

3.3.1 Site Setting and Sources

The site is completely enclosed by security fence and locked gates. As described in Section 2, there are numerous sources located on the site. Many of these sources are leaking or have leaked in the past and could pose a direct exposure threat. These sources include all of the basins and structures that are currently holding waste or wastewater and surface soils that have been contaminated by spills or releases.

The nature and extent of soil contamination attributable to the site is undetermined. Previous investigations have identified the following areas where spills and leaks have occurred onto the ground:

- West plant lift station (Ref. 7, pp. 1-7);
- East plant sludge thickener basin (Ref. 14, pp. 1-7. Ref. 18, pp. 1-3);
- West plant Trickling Filter (Ref. 5, pp. 1-6);
- East plant lift station (Ref. 6, pp. 53, 57, 59);

- East plant pump house (Ref. 6, pp. 21, 25)
- Chlorine contact chamber (Ref. 6, pp. 27, 41, 45, 47, 51).

3.3.2 Soil Pathway Receptors

The nearest residential property is located across West Richey Street from the site, approximately 195 feet from the MCC property line (Ref. 4, p. 1). There are no schools or daycare facilities located on or within 200 feet of the site (Ref. 7, p. 1). At this time, the facility is abandoned and there are no workers on-site (Ref. 6, p. 91).

No terrestrial sensitive environments are located within the known soil exposure pathway source or area of suspected soil contamination (Ref. 33, p. 1, Figure 2.1).

3.4 Air Migration Pathway

The air migration pathway TDL is a 4-mile radius that extends from sources at the site.

3.4.1 Air Pathway Sources and Setting

Numerous air pathway sources exist at the site. All of the sources listed in Section 2.4.1 could potentially cause air emissions that could be exposed to air pathway receptors.

While the site was operational, the TCEQ received several complaints about odors from the site and HCPHES and TCEQ Air Program investigators conducted several investigations. These investigations documented the release of VOCs (that included benzene, toluene, and xylenes) from the secondary clarifier, trickling filter and aeration basin. The investigators reported that they experienced burning eyes and nose and throat irritation while collecting an air sample downwind of the site (Ref. 20, pp. 1-4).

3.4.2 Air Pathway Receptors

Potential air pathway receptors include on- and off-site workers and nearby residents. There are two residential subdivisions located within a quarter mile of the site. The nearest residential subdivision is located to the south of the site and is approximately 195 feet from the site. The second subdivision is located approximately 500 feet west of the site. These residential areas are shown in Figure 6 (Ref. 4, p. 1, Ref. 7, p. 1).

City of Pasadena has a population of approximately 150,000 people. The city has a population density of approximately 3,000 people per square mile and housing unit density of approximately 1,000 houses per square mile. The nearest resident is located approximately 195 feet south of the site (Ref. 4, p. 1, Ref. 26, p. 1).

The nearest school is located at 206 Shaver Street, Pasadena, Texas, approximately 0.5 mile southeast of the site. The nearest daycare is located at 604 Shaver Street, Pasadena, Texas, approximately 0.7 mile southeast of the site. The nearest outdoor recreation area is Memorial Park, located approximately 0.5 mile south of the site. The nearest church is located at 209 West Shaw Avenue, Pasadena, Texas, approximately 0.4 mile southeast of the site (Ref. 7, p. 1).

Utility easements, underground petroleum pipelines, and railroads are located adjacent to the site. These areas are routinely visited by off-site workers who could be exposed to air emissions from the site (Ref. 7, p. 1).

Although the site is currently abandoned, it could become operational at any time and on-site workers could be exposed to air emissions at the site.

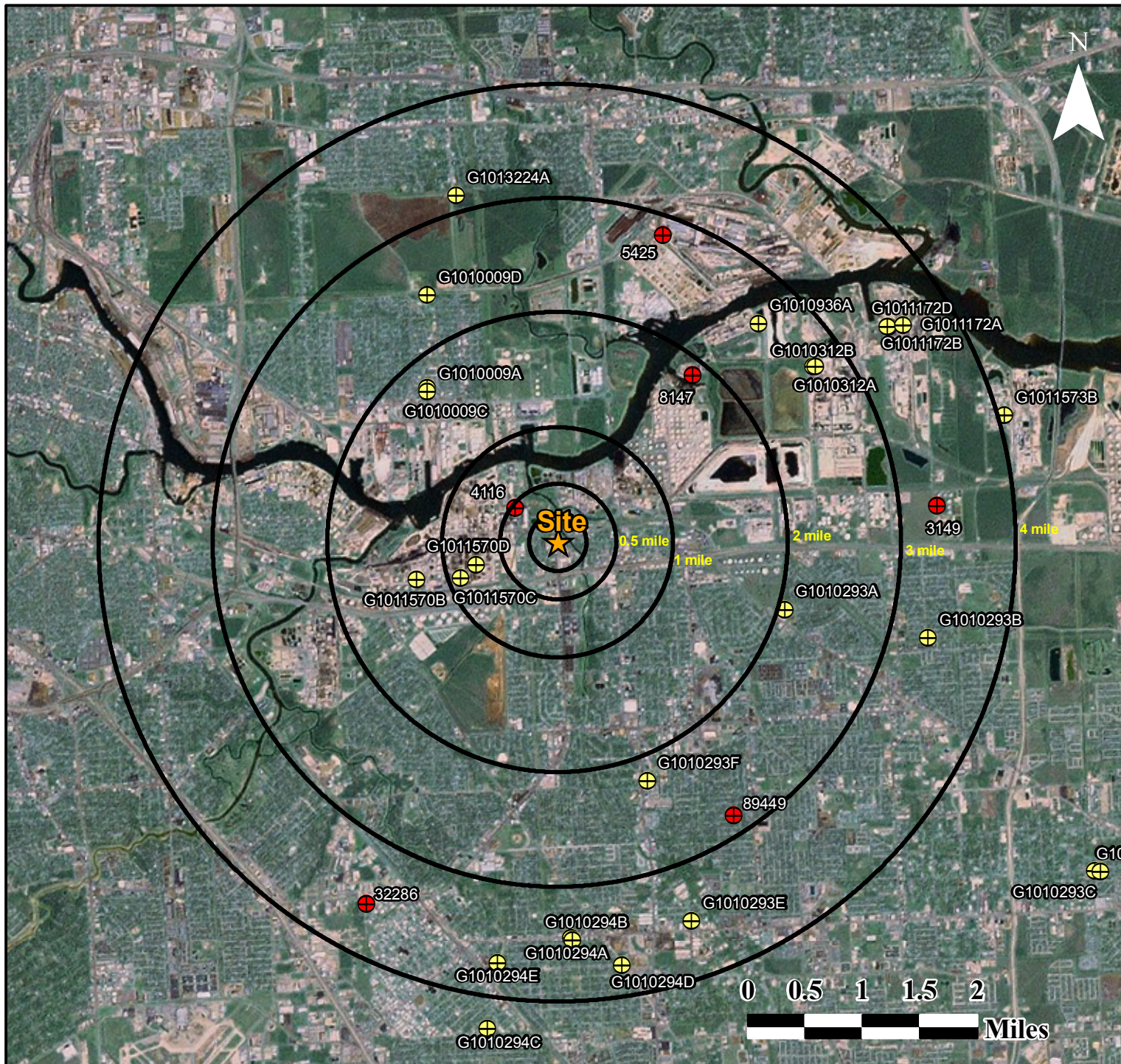




FIGURE 3.1: 4-MILE TARGET DISTANCE LIMIT MAP

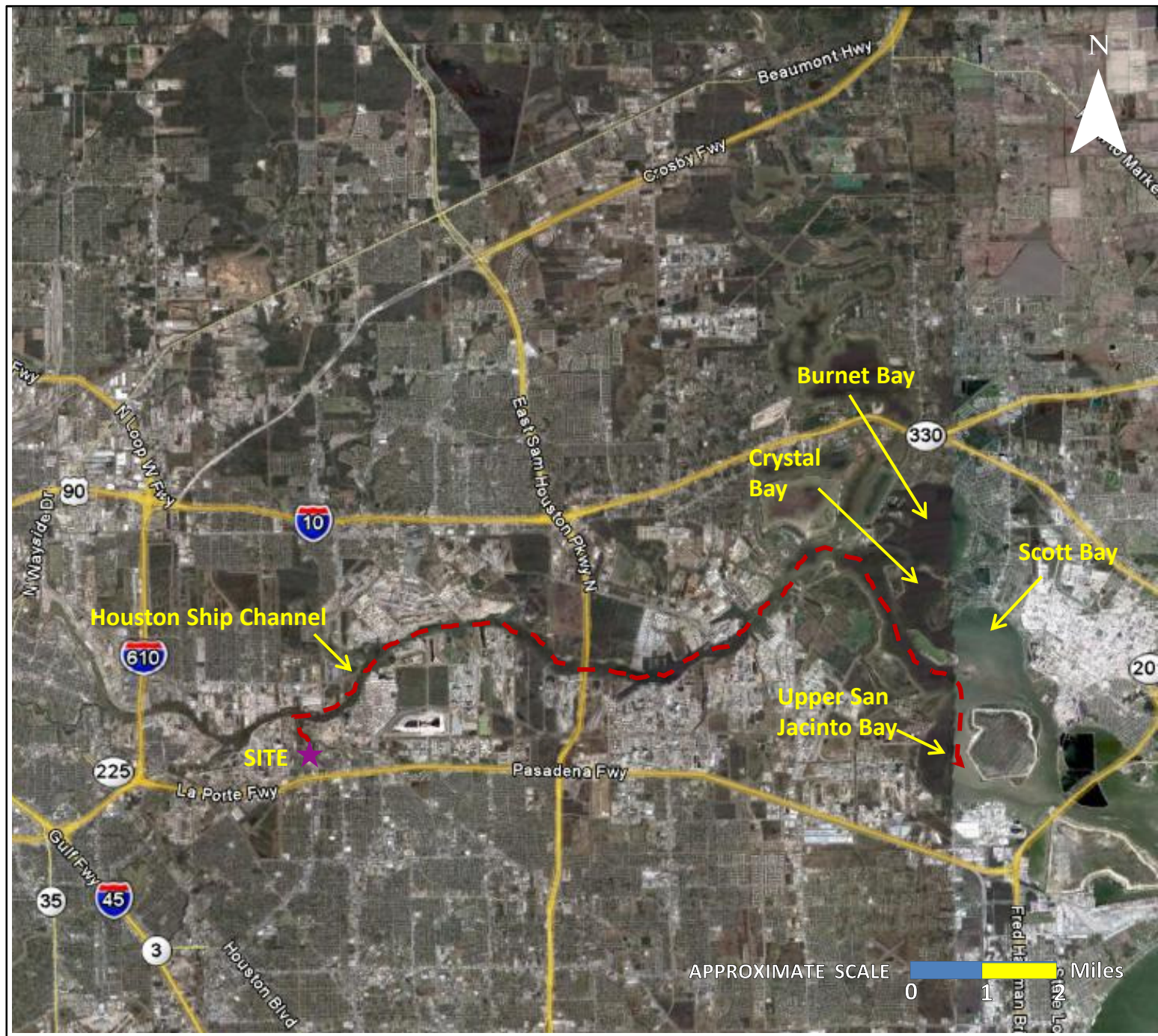
**MCC RECYCLING, LLP
200 NORTH RICHEY STREET
PASADENA, HARRIS COUNTY,
TEXAS**

TXR000079409

-  Public Water Supply Well
-  Domestic Well



The base data used for this map is the 2007 National Agriculture Imagery Program (NAIP) aerial imagery of Harris County Projection: NAD1983, UTM Zone 15. This map was generated by the Remediation Division of the Texas Commission on Environmental Quality. It is intended for illustrative or information purposes, and is not suitable for legal, engineering or survey purposes. This map does not represent an on-the-ground survey conducted by or under the supervision of registered professional land surveyor. In cases where property boundaries are shown, it only represents their approximate relative location. No claims are made to the accuracy or completeness of the data or suitability for a particular use. For more information concerning the map, contact Remediation Division at 800-633-9363. Map created on 04/05/2011 by L. Tran.

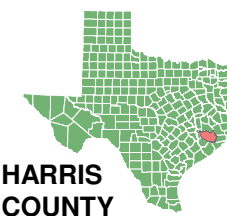


**FIGURE 3.2: 15-MILE TARGET
DISTANCE LIMIT MAP**

**MCC RECYCLING , LLP
200 NORTH RICHEY ST.
PASADENA, HARRIS CO.,
TEXAS**

TXR000079409

 15 MILE SURFACE WATER
SEGMENT DOWNSTREAM
FROM SITE



Aerial photograph shown is from Google Earth. This map was generated by the Remediation Division of the Texas Commission on Environmental Quality. It is intended for illustrative or information purposes, and is not suitable for legal, engineering or survey purposes. This map does not represent an on-the-ground survey conducted by or under the supervision of registered professional land surveyor. In cases where property boundaries are shown, it only represents their approximate relative location. No claims are made to the accuracy or completeness of the data or suitability for a particular use. For more information concerning the map, contact Remediation Division at 800-633-9363. Map created on 04/05/2011 by L. Tran.

4

SUMMARY

Groundwater Pathway – A complete groundwater pathway may exist at the site as previous investigations have reported subsurface releases of wastewater that contains hazardous substances and there are several domestic and PWS groundwater wells located within a four mile radius of the site.

Surface Water Pathway – A complete surface water pathway may exist at the site because there have been numerous documented releases of untreated wastewater that contain hazardous substances. Many of these releases flowed from the site and entered Vince Bayou. Although Vince Bayou is not used as a drinking water source, it could pose a threat to aquatic life and people (through recreation contact).

Soil Pathway – A complete soil pathway likely exists for on- and off-site receptors. Numerous spills and releases of untreated wastewater onto soil located on- and off-site have occurred and soil contamination of these areas is likely. The nearest residence is located 195 feet from the site. There are no schools, or daycare facilities located on or within 200 feet of the site. No terrestrial sensitive environments are located within the known soil exposure pathway source or area of suspected soil contamination.

Air Pathway – A complete air pathway may exist for on- and off-site receptors because waste remains at the site. Several previous investigations documented a release of hazardous substances in air downwind of the site. There are residents, schools, churches and parks located within four miles of the site.

5

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Final Rule

Friday
December 14, 1990

Part II

Environmental Protection Agency

40 CFR Part 300

Hazard Ranking System; Final Rule

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Hazard Ranking System Guidance Manual, EPA 540-R-92-026, November 1992. 1 page.

United States
Environmental Protection
Agency

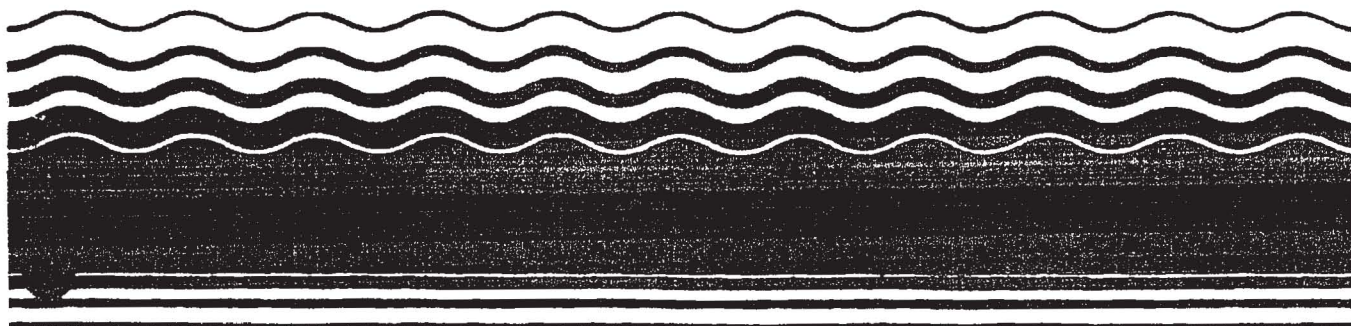
Office of Solid Waste
and Emergency
Response

Publication 9345.1-07
PB92-963377
EPA 540-R-92-026
November 1992

Superfund



Hazard Ranking System Guidance Manual



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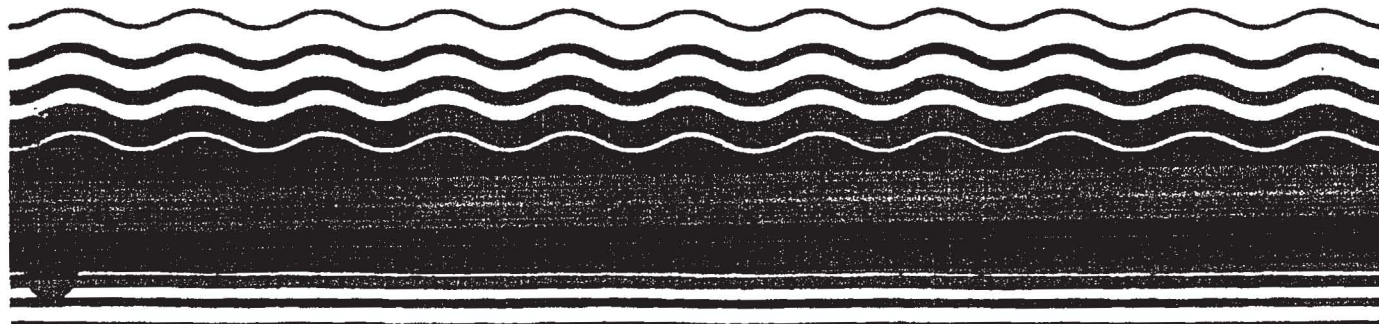
United States
Environmental Protection
Agency

Office of Emergency and
Remedial Response
Washington DC 20460

EPA/540/G-91/013
September 1991



Guidance for Performing Preliminary Assessments Under CERCLA



Reference 4:

Harris County Appraisal District. Real Property Account Information. June 01, 2010. 5 pages.




Account Number | Address | Owner Name | ?
 13-Digit Number

Tax Year: 2010

**HARRIS COUNTY APPRAISAL DISTRICT
REAL PROPERTY ACCOUNT INFORMATION
0281740000030**

Print **E-mail**
[iFile A Protest](#)[Similar Owner Name](#)[Nearby Addresses](#)[Same Street Name](#)[Related Map 5755B](#)**Ownership History | Related Accounts****Owner and Property Information**

Owner Name & Mailing Address: **US OIL RECOVERY NO 2 LLP
400 N RICHEY ST
PASADENA TX 77506-1061**

Legal Description: **TR 12C-1 & ADJ PT MCDONALD ST
PASADENA OUTLOT 28
0 PASADENA OUTLOT 28
PASADENA TX 77506**

State Class Code		Land Use Code		Building Class		Total Units	
C2 -- Real, Vacant Commercial		4300 -- General Commercial Vacant		--		0	
Land Area	Building Area	Net Rentable Area	Neighborhood	Neighborhood Group	Market Area	Map Facet	Key Map®
127,374 SF	0	0	9725.02	0	3210	5755B	536G

Value Status Information**Capped Account**

No

Value Status

Noticed

Notice Date

04/22/2010

Shared CAD

No

Exemptions and Jurisdictions

Exemption Type	Districts	Jurisdictions	ARB Status	2009 Rate	2010 Rate	Online Tax Bill
None	021	PASADENA ISD	Certified: 08/20/2010	1.350000	1.350000	
	040	HARRIS COUNTY	Certified: 08/20/2010	0.392240	0.388050	View
	041	HARRIS CO FLOOD CNTRL	Certified: 08/20/2010	0.029220	0.029230	
	042	PORT OF HOUSTON AUTHY	Certified: 08/20/2010	0.016360	0.020540	
	043	HARRIS CO HOSP DIST	Certified: 08/20/2010	0.192160	0.192160	
	044	HARRIS CO EDUC DEPT	Certified: 08/20/2010	0.006050	0.006581	
	047	SAN JACINTO COM COL D	Certified: 08/20/2010	0.170800	0.176277	
	074	CITY OF PASADENA	Certified: 08/20/2010	0.562000	0.591593	

Valuations**Value as of January 1, 2009**

	Market	Appraised
Land	127,374	
Improvement	0	
Total	127,374	127,374

Value as of January 1, 2010

	Market	Appraised
Land	127,374	
Improvement	0	
Total	127,374	127,374

5-Year Value History

Land
Market Value Land

Line	Description	Site Code	Unit Type	Units	Size Factor	Site Factor	Appr O/R Factor	Appr O/R Reason	Total Adj	Unit Price	Adj Unit Price	Value
1	4300 -- General Commercial Vacant	--	SF	127,374	1.00	1.00	1.00	--	1.00	1.00	1.00	127,374

Building

Vacant (No Building Data)

Ownership History: 0281740000030

**0 PASADENA OUTLOT 28
PASADENA TX 77506-**

Owner
US OIL RECOVERY NO 2 LLP

Effective Date
1/1/2009

[end of record]

[-close window-](#)

5756D9

SP
CITY OF PASADENA

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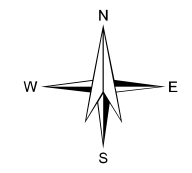
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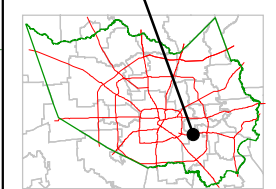
Harris County Appraisal District



0 100 200
PUBLICATION DATE:
1/16/2010



MAP LOCATION



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5	6	7	8
9	10	11	12

5755A4

5755B2

WEST BELMONT ROAD

BEVERLY COURT
028-181-000-0001

WEST BELMONT STREET

5755B5

KELLYVILLE
120-337

10B

PASADENA
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028-181-000-0079
3.1001 AC.

028-181-000-0011

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17A

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131

1248

121

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41

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31B

31A

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028-181-000-0182

028-181-000-0183

028-181-000-0184




Account Number Address Owner Name ?
13-Digit Number

Tax Year: 2010 

HARRIS COUNTY APPRAISAL DISTRICT
REAL PROPERTY ACCOUNT INFORMATION
0281740000031

 [Print](#)  [E-mail](#)
[iFile A Protest](#)[Similar Owner Name](#)[Nearby Addresses](#)[Same Street Name](#)[Related Map 5755B](#)[Ownership History](#) | [Related Accounts](#)

Owner and Property Information

Owner Name & Mailing Address: **US OIL RECOVERY NO 2 LLP**
400 N RICHEY ST
PASADENA TX 77506-1061

Legal Description: **TR 12A-1 & 12D-1**
PASADENA OUTLOT 28
Property Address: **0 PASADENA OUTLOT 28**
PASADENA TX 77506

State Class Code		Land Use Code		Building Class		Total Units	
C2 -- Real, Vacant Commercial		4300 -- General Commercial Vacant		--		0	
Land Area	Building Area	Net Rentable Area	Neighborhood	Neighborhood Group	Market Area	Map Facet	Key Map®
77,363 SF	0	0	9725.02	0	3210	5755B	536G

Value Status Information

Capped Account

No

Value Status

Noticed

Notice Date

04/22/2010

Shared CAD

No

Exemptions and Jurisdictions

Exemption Type	Districts	Jurisdictions	ARB Status	2009 Rate	2010 Rate	Online Tax Bill
None	021	PASADENA ISD	Certified: 08/20/2010	1.350000	1.350000	
	040	HARRIS COUNTY	Certified: 08/20/2010	0.392240	0.388050	View
	041	HARRIS CO FLOOD CNTRL	Certified: 08/20/2010	0.029220	0.029230	
	042	PORT OF HOUSTON AUTHY	Certified: 08/20/2010	0.016360	0.020540	
	043	HARRIS CO HOSP DIST	Certified: 08/20/2010	0.192160	0.192160	
	044	HARRIS CO EDUC DEPT	Certified: 08/20/2010	0.006050	0.006581	
	047	SAN JACINTO COM COL D	Certified: 08/20/2010	0.170800	0.176277	
	074	CITY OF PASADENA	Certified: 08/20/2010	0.562000	0.591593	

Valuations

Value as of January 1, 2009

Value as of January 1, 2010

	Market	Appraised		Market	Appraised
Land	77,363		Land	77,363	
Improvement	0		Improvement	0	
Total	77,363	77,363	Total	77,363	77,363

[5-Year Value History](#)

Land

Market Value Land

2/14/2011

Hcad Acct: 0281740000031

Line	Description	Site Code	Unit Type	Units	Size Factor	Site Factor	Appr O/R Factor	Appr O/R Reason	Total Adj	Unit Price	Adj Unit Price	Value
1	4300 -- General Commercial Vacant	--	SF	77,363	1.00	1.00	1.00	--	1.00	1.00	1.00	77,363

Building

Vacant (No Building Data)

[Home](#) | [Record Search](#) | [Forms](#) | [Maps](#) | [Resources](#) | [Help](#)

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Ownership History: 0281740000031

**0 PASADENA OUTLOT 28
PASADENA TX 77506-**

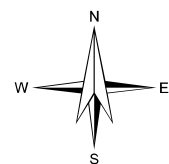
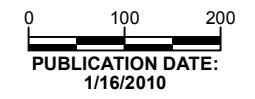
Owner
US OIL RECOVERY NO 2 LLP

Effective Date
1/1/2009

[end of record]

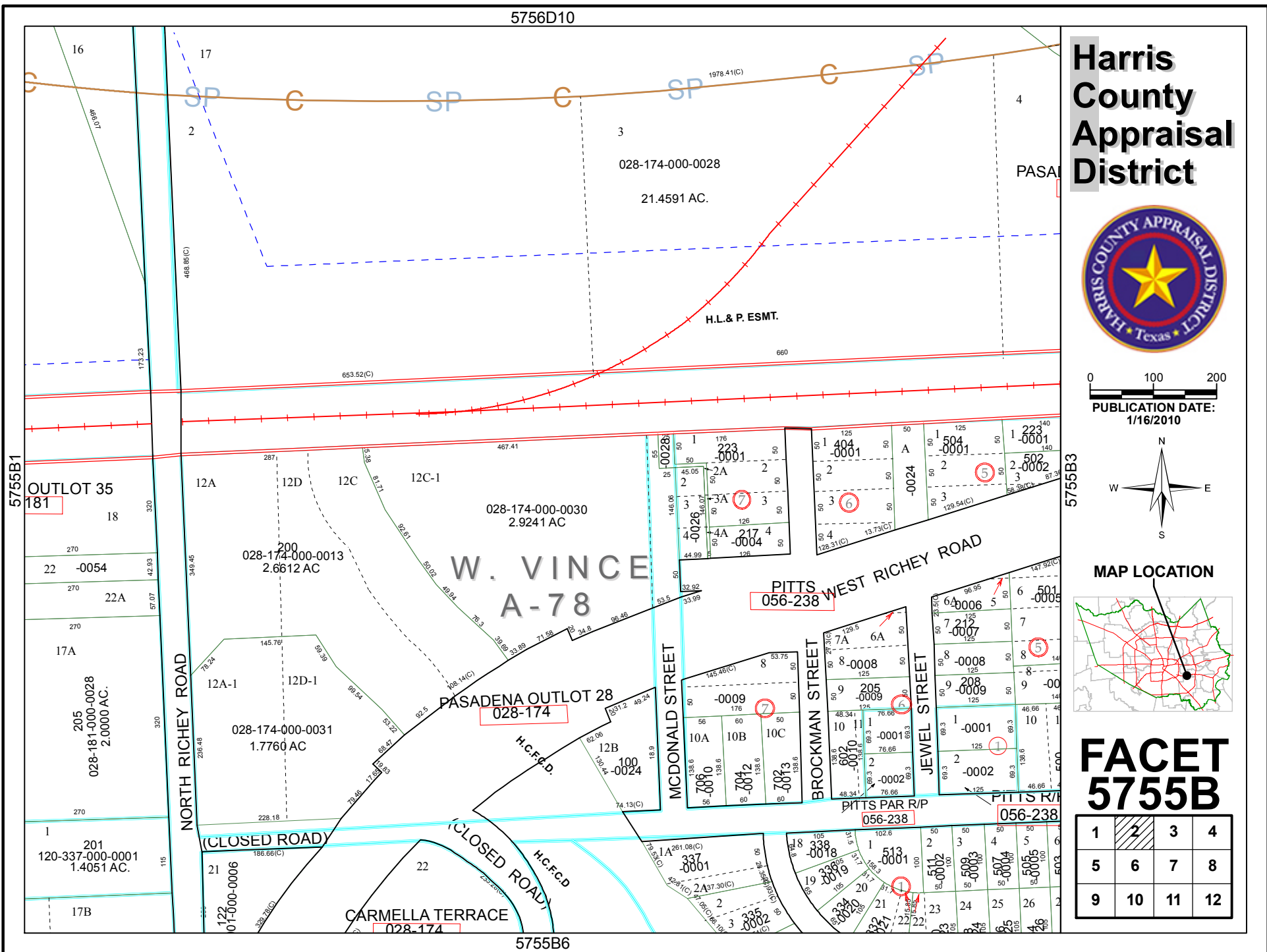
-close window-

**Harris
County
Appraisal
District**



FACET 5755B

1	2	3	4
5	6	7	8
9	10	11	12



Reference 5:

Texas Commission on Environmental Quality. Pretreatment Compliance Investigation
Report: Investigation #768045. August 20, 2009. 6 pages.

Texas Commission on Environmental Quality

Investigation Report

MCC RECYCLING LLP

CN603445016

MCC RECYCLING

RN105684302

Investigation # 768045

Incident #

Investigator: GARY FOGARTY

Site Classification

Conducted: 08/20/2009 -- 08/20/2009

No Industry Code Assigned

Program(s): PRETREATMENT

Investigation Type : Compliance Investigation

Location : 200 N RICHEY ST., PASADENA, TX 77506

Additional ID(s) :

Address: 200 RICHEY ST;
PASADENA, TX 77506

Activity Type : REGION 12 - HOUSTON
PTRCNAPPIU - PT IU Recon - Non-Approved Program

Principal(s) :

Role	Name
RESPONDENT	MCC RECYCLING LLP

Contact(s) :

Role	Title	Name	Phone
Participated in Investigation	INVESTIGATOR	MS ELIZABETH GUYNI	Work (713) 740-8763
Participated in Investigation	PLANT MANAGER	MR ANDY THOMAS	Cell (713) 291-2263
			Work (713) 473-0013
Participated in Investigation	EMERGENCY RESPONSE SPECIALIST	MR GREG HILL	Work (713) 740-8768
Regulated Entity Contact	PLANT MANAGER	MR ANDY THOMAS	Work (713) 473-0013
Regulated Entity Contact	PRESIDENT	MR KLAUS GENSSLEF	Work (713) 473-0013
			(713) 472-5668
Regulated Entity Mail Contact	PRESIDENT	MR KLAUS GENSSLEF	(713) 472-5668
			Work (713) 473-0013
Participated in Investigation	ENVIRONMENTAL INVESTIGATOR	MR JOHN EMERSON	Work (713) 740-8753
Participated in Investigation	WATER COMPLIANCE COORDINATOR	MS DENISE HALL	Work (713) 740-8714

Other Staff Member(s) :

Role	Name
Investigator	CHARLES BURNER
QA Reviewer	KELLEY KARTYE
Supervisor	BARBARA SULLIVAN
Investigator	TERRY VASUT

Associated Check List

Checklist Name

Unit Name

PRETREATMENT IU SHORT FORM - NONAPPROVEI MCC Recycling 768045
PROGRAM

Investigation Comments :**INTRODUCTION**

An Industrial User Reconnaissance investigation of MCC Recycling, LLP was conducted on August 20, 2009 to assist in an odor complaint and to verify compliance with a temporary injunction. Terry Vasut, Environmental Investigator, TCEQ Houston Region Air Section and Charles Burner, Environmental Investigator, TCEQ Houston Region Waste Section were present during the investigation. Mr. Vasut conducted a separate odor investigation. Also present, were Elizabeth Guynn, Denise Hall, Greg Hill and John Emerson of the Harris County Public Health and Environmental Services. The facility was not notified about the investigation because this was a complaint investigation. No exit interview was performed as this investigation was not intended to be a pretreatment comprehensive compliance investigation. However, during the course of this investigation at least one violation of applicable pretreatment standards was found and at least one violation of water quality regulations was found. A copy of the TCEQ Exit Interview Form was sent by fax and received by Mr. Klaus Genssler, President

GENERAL FACILITY AND PROCESS INFORMATION

The MCC Recycling facility is located at 200 Richey Street, Pasadena, Texas. The site was the former location of the City of Pasadena "old" Vince Bayou Wastewater Treatment Plant. MCC Recycling discharges process wastewater commingled with domestic wastewater to the City of Pasadena New Vince Bayou Wastewater Treatment facility (TPDES Permit No. WQ0010053-009; EPA I.D. No. TX0117528).

The facility is receiving partially treated process wastewater from US Oil Recovery, LLC (USOR). USOR is located at 400 N. Richey Street, Pasadena, Texas. USOR receives and treats trucked in oily and organic chemical wastes. USOR is subject to applicable pretreatment standards contained in 40 CFR §437.47(e). MCC Recycling was found to be discharging treated process wastewater to the City of Pasadena wastewater treatment system. Since MCC Recycling is acting as a treatment unit for USOR, they too are subject to applicable pretreatment standards contained in 40 CFR §437.47(e).

As stated above, the MCC Recycling facility occupies a site which had once been the City of Pasadena Vince Bayou Wastewater Treatment Plant. The old plant had been designed and used to treat domestic wastewater. Structures of the old wastewater treatment plant have been converted by MCC Recycling into oily and organic wastewater treatment and storage units. The MCC recycling facility is located on both sides of Vince Bayou. The portion of the MCC Recycling facility located on the east side of the bayou is commonly called the east plant. The portion of the MCC Recycling facility located to the west of Vince Bayou is commonly called the west plant.

The MCC Recycling facility receives piped in process wastewater from USOR. The wastewater is pumped up to the headworks of the MCC Recycling facility. On top of the headworks is an oil and water separator. The oil water separator has been installed since the last investigation performed on June 3, 2009. The oil is removed and stored in compartments of the separator. The oil is periodically collected from a discharge pipe for recycling. The wastewater flows from the oil water separator to a primary clarifier. More oil is collected from the surface of the clarifier. Wastewater from the primary clarifier flows to what was an old trickling filter. The trickling filter currently is serving as a holding tank. Wastewater from the trickling filter flows to an aeration basin. Alum is added to act as a flocculent. Wastewater from the aeration basin is pumped to a clarifier. The solids flock and float to the surface. The wastewater is drained off and pumped to the designated sample point. The City of Pasadena collects wastewater samples at the sample point for compliance monitoring with an automatic sampler. The wastewater is discharged to the City of Pasadena wastewater collection system after the sample point.

As stated above, this facility is subject to applicable pretreatment standards in 40 CFR Part 437. In this particular category, the industrial process and wastewater pretreatment system are the same.

The City of Pasadena has issued an industrial use permit to MCC Recycling which requires the facility to be subject to pretreatment standards in 40 CFR Part 437 (Subparts A, B, and C) and to the City's local limits. However, the TCEQ requires that MCC Recycling to be subject to the same applicable categorical pretreatment standards contained in 40 CFR §437.47(e) as is USOR. All monitoring occurs at the auto-sampler. The auto-sampler is enclosed within a locked fence. It is unknown at this time how MCC Recycling is performing self-monitoring. (The US Oil Recovery (USOR) has been using the same sample point for compliance monitoring.)

BACKGROUND INFORMATION

The facility was last inspected by the TCEQ during an investigation conducted on May 18, 20, and June 3, 2009. The results of that investigation resulted in the issuance of a Notice of Enforcement. The case is still ongoing. The findings of the enforcement were failure to prevent unpermitted discharge of wastewater and failure to submit the required baseline monitoring report. The results of this investigation are being forwarded to be included in the enforcement action.

The August 20, 2009 investigation found wastewater escaping to the ground from the trickling filter. This was an unpermitted discharge of wastewater. This investigation found that the wastewater treatment process had been changed with no prior formal notice of the change having been made to the designated control authority (TCEQ).

The facility currently has a Temporary Injunction (TI) issued through Harris County. This investigation found that some requirements of the injunction are not being followed.

MCC Recycling was required by the TI to cease the intake of wastewater from USOR until the TCEQ and Harris County Public Health and Environmental Services (HCPHES) received verification from a Civil Engineer proficient in wastewater treatment facilities that the wastewater treatment facilities at both MCC Recycling and USOR were structurally sound and be capable of functioning for the purpose of wastewater treatment. MCC Recycling hired a chemical engineer to determine the soundness of the wastewater treatment facilities at the MCC Recycling site and how to operate the wastewater treatment units. Although the chemical engineer might prove useful in determining how to operate the MCC Recycling wastewater treatment facilities, that is not the correct type of engineer to determine the soundness of the wastewater treatment structures. During the previous investigation it was noted that an area next to the primary clarifier had been excavated to allow for an oil storage container. The container would provide a receptacle to collect and store oil skimmed off of the primary clarifier. However, a large gap has appeared along the base of the primary clarifier. The excavation may have contributed to the opening between the ground and the clarifier. Erosion of soil around the primary clarifier could result in failure of that structure and allow process wastewater to escape.

The injunction required that all unauthorized discharges of wastewater cease at the MCC recycling facility. As stated above, there were wastewater leaks to the ground from the old trickling filter. (see attached pictures numbers 9, 11, 13, and 15)

The TI required that the old outfall for the west plant and the old outfall from the old chlorine contact chamber located at the east plant to be plugged. The investigation found that the old outfall from the MCC Recycling west plant was plugged with a steel plate. However, the old outfall for the east plant did not appear to be plugged as required by the injunction. (see attached picture number 21)

There was still some sludge being stored in the old chlorine contact chamber. The injunction required that all of the sludge was to have been removed from the chlorine contact chamber within 60 days. The injunction was issued June 8, 2009. Sixty days passed on August 7, 2009. (see attached pictures numbers 22 and 23)

The TI required that a minimum of 18 inches of freeboard to be maintained on all open tanks at the MCC Recycling facility unless the design of the structure in use is being used as intended (for example: an old clarifier is being used as a clarifier or the old trickling filter is being used as a trickling filter). During this investigation, what had been the trickling filter had only 14 inches of freeboard. The old trickling filter did not appear as being used as a trickling filter. The water level was high enough to touch the bottom of one of the rotating influent distributor arms. (see attached picture number 12)

Compliance with the other requirements of the TI is undetermined. (See attached TI for other requirements)

ADDITIONAL INFORMATION

The west plant's structures were all in use except for the headworks and the old lift station. The headworks' structure was being used as a platform to elevate the oil water separator. At the east plant, the old clarifier next to the pump room was being used as a final clarifier. Solids were floating on the surface. The old aeration basin, digester, and the old final clarifiers were being used as wastewater storage vessels. The wastewater in the old final clarifiers and the digester had turned septic. Although the wastewater had turned septic, the odors were not very strong.

Hydrocarbon odors were detected at the oil water separator, the primary clarifier, the old trickling filter, and the aeration basin which are located in the west plant. Septic hydrocarbon odors were detected at the old final clarifiers and digester located in the east plant.

The pump room next to the old digester was investigated. New piping had been installed which appeared to better interconnect the east and west plants. There is more piping being installed. It was not clear where the new pipe was going. At least one segment was still not connected. The mystery pipe found on May 18, 2009, had mostly been removed. The section located under the drive next to the chlorine contact chamber was still there. (see pictures numbers 16, 17, 21, and 26)

The previous investigation conducted on May 18, 20, and June 3, 2009 resulted into a Notice of Enforcement (NOE) being issued. The case is still pending. The NOE was due to the numerous unpermitted discharges occurring at the MCC Recycling facility during the period of May 15 to June 8, 2009. The current investigation found leaks coming from the old trickling filter. These leaks are also unpermitted discharges.

The NOE also contained a violation for failing to submit a baseline monitoring report (BMR) to the designated control authority 90 days prior to discharging process wastewater to a publicly owned treatment works (POTW). The City of Pasadena is a POTW which does not have an approved pretreatment program. Since the POTW does not have an approved pretreatment program, the designated control authority is the TCEQ. Therefore, the BMR was required to be submitted to the TCEQ 90 days prior to discharging process wastewater to the City of Pasadena.

Harris County Public Health and Environmental Services issued a violation notice to MCC Recycling LLC in a letter dated August 27, 2009 concerning the odors emissions which contain benzene and acetone. The notice also addresses the leaks from the trickling filter and non-compliance issues with the TI.

NOE Date: 9/25/2009

OUTSTANDING ALLEGED VIOLATION(S) ASSOCIATED TO A NOTICE OF ENFORCEMENT

Track No: 377620

Compliance Due Date: To Be Determined

Violation Start Date: Unknown

Alleged Violation:

Investigation: 768045

Comment Date: 09/21/2009

Failure by MCC Recycling LLP to prevent an unpermitted discharge of wastewater. The vessel formerly known as the trickling filter was observed to be leaking wastewater onto the ground at the MCC Recycling LLP facility. One of the leaking sites was in view of the Richey Street entrance to the site. MCC Recycling had erected a blue tarp in front the leak. A second and third leaks were observed in the same vessel. one of the leaks was on the side of the vessel facing Vince Bayou.

Recommended Corrective Action: MCC Recycling LLP must prevent all unpermitted discharges of wastewater to the environment.

Others**ASSOCIATED TO A NOTICE OF ENFORCEMENT****Track No:** 377619**Compliance Due Date:** To Be Determined**Violation Start Date:** Unknown**40 CFR Chapter 403.12(j)****Alleged Violation:**

Investigation: 768045

Comment Date: 09/23/2009

Failure to notify the control authority in advance of any changes to the industrial processes at the MCC Recycling LLP facility. MCC Recycling LLP has added an oil water separator to their wastewater treatment process. Since MCC Recycling is subject to applicable pretreatment standards contained in 40 CFR Part 437- Centralized Waste Treatment Point Source Category, the wastewater treatment process at MCC Recycling is the industrial process. Any changes to the industrial process which could change the character of the wastewater being discharged to a publicly owned treatment works (POTW) requires the industrial user to give prior notification to both the control authority and the POTW. The MCC Recycling facility discharges process wastewater to the City of Pasadena wastewater treatment system. Since the City of Pasadena does not have an approved pretreatment program, the designated control authority is the TCEQ.

Recommended Corrective Action: MCC Recycling must submit all required reports including reports of changed discharge to the TCEQ and the City of Pasadena.

Signed _____
Environmental Investigator

Date _____

Signed _____
Supervisor

Date _____

Attachments: (in order of final report submittal)

___ Enforcement Action Request (EAR)

___ Letter to Facility (specify type) : _____

Investigation Report

___ Sample Analysis Results

___ Manifests

___ NOR

___ Maps, Plans, Sketches

___ Photographs

___ Correspondence from the facility

___ Other (specify) :

Reference 6:

Texas Commission on Environmental Quality. Field Notes for U.S. Oil Recovery LLC. EPA Emergency Response. July 1, 2010 through November 5, 2010. 179 pages.

Terry Andrews - TCEQ

cell - 832-392-0437

office - 713-767-3560

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Blue Cover			
Item No.	Numbered Pages	Ruling	Size
Item No. 43-571	120	Record	9 1/2" x 7 1/2"
Item No. 43-581	120	Record	11" x 8 1/2"

List+Practice 27

Pasadena Police - 713-477-1221

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7/1/10 - USOR ER - Terry Andrews notes

18:25 - Called Adam Adams, EPA, asked him what his plans were. He told me that he was planning on catching a flight to Houston this evening. We made plans to meet around 9:00 PM at the site. Response # is NRC #946255.

19:45 - I drove by site, saw that it was locked (front gate). Bayou is above Richey Road bridge (Vince's Bridge) about 6". Did not see any oil or sheens on water flowing down front driveway. Went back to office.

21:30 - After finding out that Adam's flight had been delayed and he probably won't get here till 10 or so, I went home.

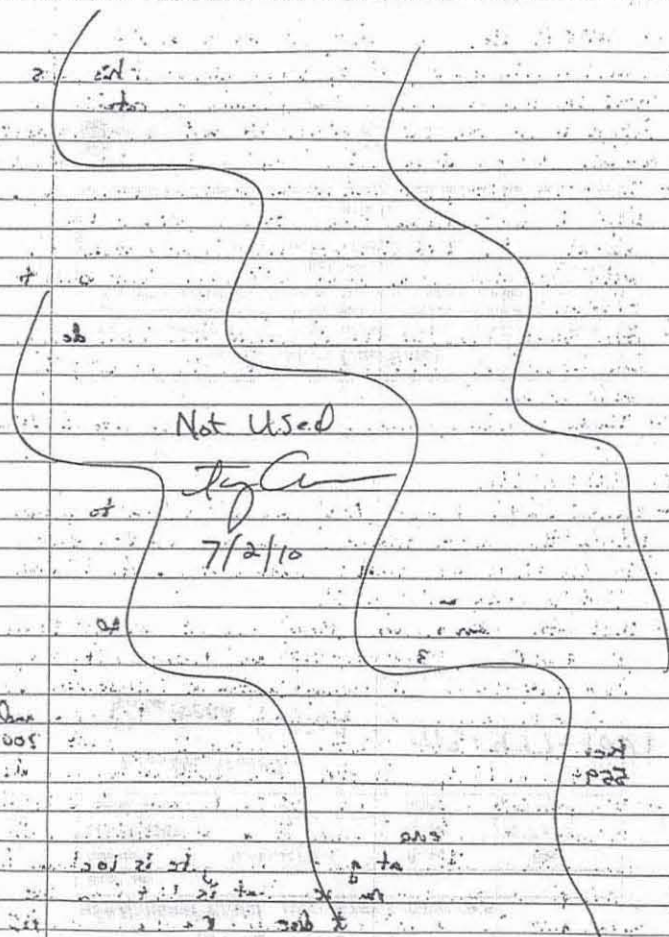
22:30 - Talked to Adam, made plans to meet at site at 7:00.

7/2/10 USOR ER

06:45 - Called David Greene (AG) and asked him to please inform the USOR attorneys that we needed entry to US Oil Recovery facility immediately. He told me that he would work on it.

07:00 - Met with Adam Adams (EPA) and his START team (Derrick Cobb, 832-347-4180 and Rebecca Ayres, 832-514-0429) at Denny's located at intersection of 225 + Richey. We discussed site. Derrick and Rebecca work for Weston Solutions, Inc., Suite 700, 5599 San Felipe, Houston, TX. Greg Gaudin arrives also.

07:45 - We pull into driveway of US Oil Recovery, 400 North Richey, Pasadena. There is a large HERTZ trailer and driver waiting at gate. The gate is locked. Adam attempts to call the number that is listed on the front gate "for access" but doesn't reach anyone. As we wait, a man comes from the facility and opens the gate. He says that he does not work there and cannot give us access to the facility. ^{the gate}



7/2/10 Continued - Terry Andrews notes

0838

The trailer pulls in and the man goes back to building. Adam tries a phone number that the man gave him. We have looked along the east side fence of the facility and although there is water running off in several locations, including the front driveway, we do not see any signs of contamination or oil leaving the facility. I called David Greene and he said that he spoke to the USOR attorney and that it was OK with him for us to enter - he reportedly said we could break the locks if we needed to. Meanwhile, Adam has talked to the owner, Klaus Gensler, who answered the number that the man inside the facility had gave us. Klaus Gensler gave Adam the name and number of his attorney when Adam asked about access to the site. Adam calls this attorney (Joe Sibley, 713 898 0494) and asks for access. Adam told me that the attorney had said that if we sent him an access order that he would sign it and send it to Adam. Adam has someone send him an access agreement.

0900

Denise Hall and Craig Hill, both with HCPHES (Harris County Public Health & Environmental Services) drive up. Ms. Hall informs us that there is a hearing this morning at 0900 and hopefully the judge will appoint someone as a "receiver" for the property (or business?).

0900

The man inside the facility comes back out and tells us that his name is Jeff Dakes. He gave his phone number to Adam. He tells us that he has bought some vapor emission equipment from Klaus and that he is moving it out. He says he is taking it to Mobile, Alabama. TJG 7/2/10

Not

Used by

TJ Ah

7/2/10

7/2/10 Continued - Terry Andrews notes

- 0900 Jeff Oakes and the two trailer/trucks leave the Facility and lock the gate. Ms. Hall leaves. Craig stays.
- 0905
to Greg, Adam, Derrick, Rebecca, Craig, and I drive around to the west side of the facility. After leaving the trucks on Crown Street, we walked to the northwest corner of the facility. We see that water is running off the property in two separate locations near the northwest corner. Greg and I walked through a wetlands area near several large transmission towers and looked for signs of oil. We didn't see any sheens or oil in this area. This area is between the facility and USOR. I took several photographs in this area. Photo 01 is looking south at rivulet of water coming from site near NW corner of fence. Photo 02 is looking up hill at site. Water is running through the grass to my location.
- 0915 We notice a large gap (about 8-10 feet) in the fence about 50 feet south of the NW corner. Everyone enters the site through this opening. We see a lined (white HDPE liner) pond that is completely full and is ~~overflowing~~ ^{overflowing} water from its northeast corner onto the ground. This water is traveling straight north along the building and then flowing off site into the grassed area located north of the site. Photo 03 is looking south at stormwater pond and water coming from the pond. Photo 04 is looking at NE corner of pond and water that is overflowing out of pond. We then looked in bioreactor and noted that it is $\sim 1/3$ full.
- 0930 We then walked around the north end of the building and equipment to the east side of the building. There is a large parking lot with roll-offs parked along the concrete curb. The

Not used

by

7/2/10

7/2/10 Continued - Terry Andreas notes

9:40 parking lot is composed of asphalt + concrete. There is water ponded in the parking lot near the office building. We see oil and a brownish yellow emulsion-like material floating on the water. We see oil and sheen flowing from the roll-offs and several bays located along the north end of the building into the ponded water. Photo 05 is of oil in a puddle that is flowing from one of the oily bays to the "parking lot pond". Photo 06 is looking south at the parking lot. Photo 07 is looking into uncovered roll off that is parked in the parking lot. Several of the roll-offs (approx. 15) are very full and will overflow if we receive more rain. Photo 08 is looking south at ~150 covered rolloffs in field to the southeast of the parking. Photo 09 is of leaking roll off in parking lot area. The rolloff is marked "Hazardous Waste Oct 08". The concrete is heavily etched where leak has fallen - suggests that material is acidic. Photo 10 is looking south at water (and oil) ponded on parking lot. Photo 11 is looking south at curb and office building. Photo 12 is looking into roll off with numerous containers. Photo 13 is looking SE at parking lot. Photo 14 is looking mostly E and shows water that has ponded in parking lot is flowing around office building area and then down the main driveway of the facility. Photo 15 is looking west at water flowing from parking lot. Photo 16 is looking south at water collecting at intersection of Richey Road + the driveway. Photo 17 is of skuzzy looking - film on top of water that has ponded at intersection of Richey Road and main driveway. *ATG* - 7/2/10

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7/2/10 Continued - Terry Andrews notes

The skuzzy looking film (that is probably the emulsion type material that we are seeing on water ponded in the parking lot) appears to be coming down the driveway from the facility (WSOR), flowing across Richey Road, and then entering Vince Bayou (which is next to the road now). Photo 18 is looking west up driveway at release. Photo 19 is of water ponded upgradient of the driveway intersection with Richey Road. It does not have the skuzzy film on it. Photo 20 is of Vince Bayou which has risen and is now next to Richey Road. The same skuzzy film can be seen here where water has flowed across the road. Area of skuzzy film is small - about the size of a small dinner table. Photo 21 is looking south at water ponded along Richey Road.

10:00 Adam and I conferred and decided that we had seen at least two areas where hazardous substances were leaving the Site. These were the stormwater pond discharge and the parking lot pond discharge. We continued to make calls to determine if anyone knew about our access agreement but was told that they were still in the hearing. We decided to take a lunch break and wait for access agreement to be signed. Adam says that he had spoken to his regional council and they preferred him to have a signed access agreement before we got to work.

10:45 I leave site and eat at fast food nearby. I speak with Donna and tell her about access situation. I then head to office and check emails.

12:30 I receive email with consent agreement attached - signed by Joe Sibley. I leave office and drive through extremely heavy rain. *Ty A 7/2/10*

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7/2/10 Continued - Terry Andrews notes

1300

Arrived at Site in heavy rain. I noticed that the bayou has ~~risen~~ risen and now is over Richey Road in the area of the driveway. I park at the railroad and walk in. The START team is conducting an inventory of rolloff boxes that have high water levels. Office is unblocked.

1440

Eagle SWS (ERRS Contractor) arrives at Site. They bring approx. 6-8 men, 4 pickups, cargo truck, trailer, and a large bottle truck. They place booms near south end of parking lot pond and begin sucking fluids out of roll-off boxes that contain high levels of water/fluids.

1450

Photo 22 is looking east at oil/emulsion floating in parking lot pond. Photo 23 is close up of same. Photo 24 is looking at oily bay where some oil is flowing out onto the parking lot. Photo 25 is looking west at open roll-off box that is overflowing onto parking lot. Photo 26 is looking southwest at Eagle SWS personnel piping liquids out of roll-off that was pictured in Photo 25.

1530

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Bayou has risen dramatically ~ 4 feet above road at intersection of Richey + BSOR. Eagle tried to deliver free trucks but water is too deep. Photo 27 is looking South at large group of roll-off boxes at Site. Photo 28 - Same, Photo 29 is of manifest in northernmost office. Photo 30 is of boxes of invoices, manifests, and other facility records in northernmost office. There are approx. 60 boxes of records and 25-30 file drawers of records. Photo 31 is of file cabinet and boxes of records in northernmost office. Photo 32 is a photo of manifest in northernmost office. I took a walk through the main building there are hundreds of drums and tanks in the

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7/2/10 Continued - Terry Andrews notes
central part of the building. Photo 33 is view
of stacked drums. Photo 34 is view of totes.
Photo 35 is view of Vince Bayou at flood stage.
Photo 35 is taken from where I parked along railroad.

1730 Photo 36 is looking north at Vince Bayou.
As the rain continued we continued to place booms and
peels to soak up oil and remove oil and sucked up
water from roll-offs.

20:30 All Eagle and Weston personnel leave site except
for 2 Eagle personnel who are staying the night
and watching everything. They have a light/generator
set. I leave site.

7/3/10 - beautiful sunny weather (at first)

0745 I arrive at site - set up office. Frac tanks
begin arriving (two are already here and set up).
They off-load the bobtail and begin pumping water
from the parking lot pond. G-8 Eagle Personnel are
here and Rebecca & Derrick of Weston are here.
Workers bring in frac tanks and set up pumps and
hoses. They begin pumping out secondary containment
areas in the northern part of the facility where
a lot of the oil seems to be coming from.

1000 Adam and I discuss the manifests and he asks
his START team to begin scanning all of the
records in the office. It begins to rain
again.

1057 I walk around site and take some photos as follows:

- 01 - looking south at parking lot pond - back again
after heavy rain episode.
- 02 - frac tanks set up by ERRS team - note
secondary containment liners.
- 03 - frac tank closed
- 04 - bags of booms (used) that we have generated

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7/3/10 cont. Terry Andrews notes

05 - View looking east down main drive way - note no runoff from parking lot pond.

06 - View looking north at finished parking lot pond (with pump + hose), bobtail truck, frac tanks in distance (orange/red color)

07 - Same view

08 - View of leaking roll-off on parking lot.

09 - View of front door of office, Eagle Cargo truck + bobtail truck

12:00 I leave site for lunch - it begins to rain harder. ERS team has set up ~ 6 frac tanks and are pumping water/liquids/oil from roll-offs, secondary containment, parking lot pond. Crew is continually placing and removing boom.

13:30 I take another walk around site and take the following photographs:

10 - View of parking lot pond with boom (south end)

11 - View from office window looking west during moderate rain - not portable toilets, eye wash station, frac tanks, pressure spayer on far right of photo. Orange containment boom is from yesterday's containment.

12 - View looking north at parking lot pond

13 - View of overflowing storm water pond

14 - View of bay in northern area of main building

15 - Same - strong ethylene glycol odor here

16 - View of another oily bay in northern area

17 - View of ERS team frac tank

18 - View of oily bay - oil is being discharged from this bay during high rainfall.

19 - View of another bay in north part of main building

20 - View of bay with oil - edge of covered area 7/3/10

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7/3/10 Continued - Notes by Terry Andrews

- 38 - Photo of leaks in large tanks in far NW part of tank area
- 39 - Photo of liquid level in secondary containment - photo 29 was collected next to this
- 40 - View looking north from catwalk in tank area

41 - View looking north of site from catwalk in tank area

42 - View of roll-offs and far tanks parked along north end of parking lot

I noticed that most of the storage tanks are full.

Rest of afternoon was spent performing inventory by the START team, and continued pumping and booming by the EPRS team. The start team also ~~completed~~ started scanning documents + records. By 6:40, discharges from the parking lot pond is under control (pumped down) and we are ready to go into night mode.

During night mode we leave two personnel (from EPRS team) who watch site all night till the rest of the team gets back here at 7:00 AM. I left site at 6:45.

7/4/10

0653 I arrived at Site. I made a brief walk through - parking lot pond has been pumped down to just a small area - approx. 40 feet by 10 feet. Sunny with light south wind. EPRS contractors are pumping down various areas these include the sec. containment areas in the AST area and numerous roll-offs. START Team are assessing the roll-offs (two personnel) and the ASTs.

Terry Andrews 7/4/10

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7/3/10 Continued - Notes by Terry Andrews

- photo 21 - View of bays - with oil & emulsions
 22 - View of oily walkway - pump is
 pulling water from over-filled secondary
 containment area.
 23 - View looking north at parking lot
 area next to oily bays where oil is draining.
 24 - View looking west at northern treatment
 area (uncovered areas).
 25 - View looking south at parking lot
 pond after rains.
 26 - northern treatment area
 27 - northern treatment area
 28 - Stairs leading to secondary containment
 around tanks.
 29 - Photo of stairs, water is overflowing
 down wall from secondary containment
 area.
 30 - Roll-off parked on NE corner of
 parking lot.
 31 - View looking west at sheens on
 pavement.
 32 - View from aeration basin / bioreactor
 looking south at stormwater retention pond.
 33 - View of aeration basin.
 34 - View of aeration basin - water looks
 about 2-3 feet deep (could see ladder).
 35 - looking at roll-offs positioned along
 western perimeter of facility - note gap in
 fence.
 36 - View looking north from aeration basin.
 37 - View of water running off-site - water
 is mostly from area of stored roll-offs
 along western fence.

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0750 Personnel at the site include the following:

Weston - Rebecca Ayres, Derrick Cobb, John Lynch,
Jason Fulton, Cynthia Holt, Heather Sherr,
Amy Cellias

Eagle - Gary Bubbs (head), Jose Ransel, Asa Shrewsbury,
Miguel Sienz, Jesse Plante

EPA - Adam Adams

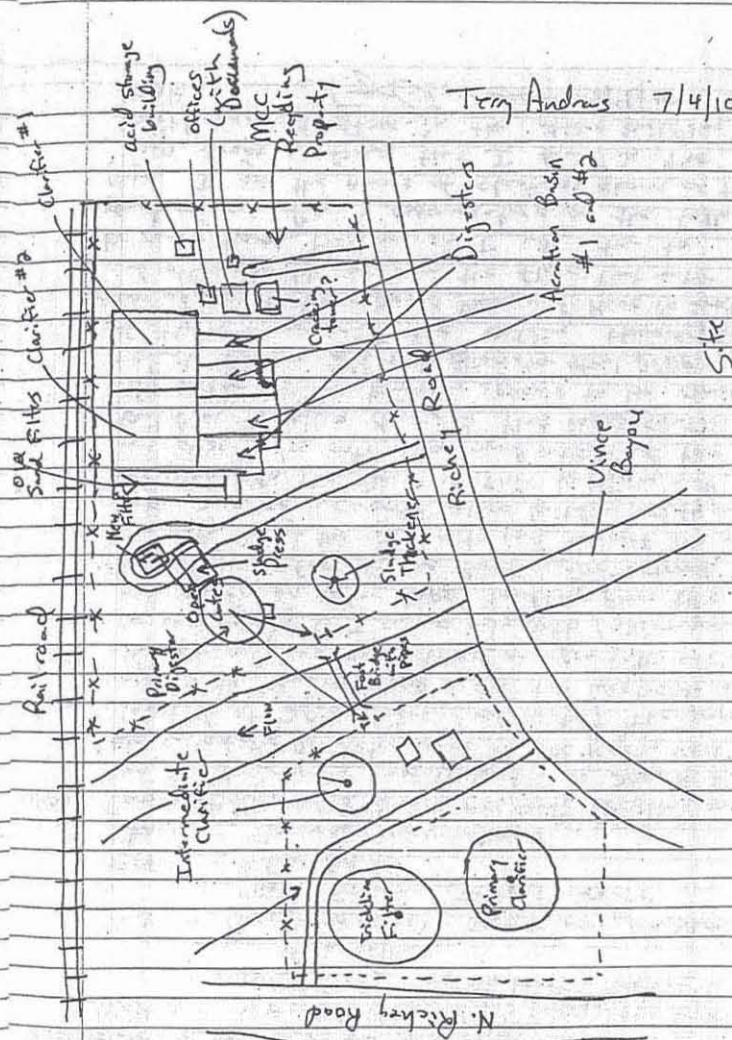
Shaw - Stephanie Levinghouse

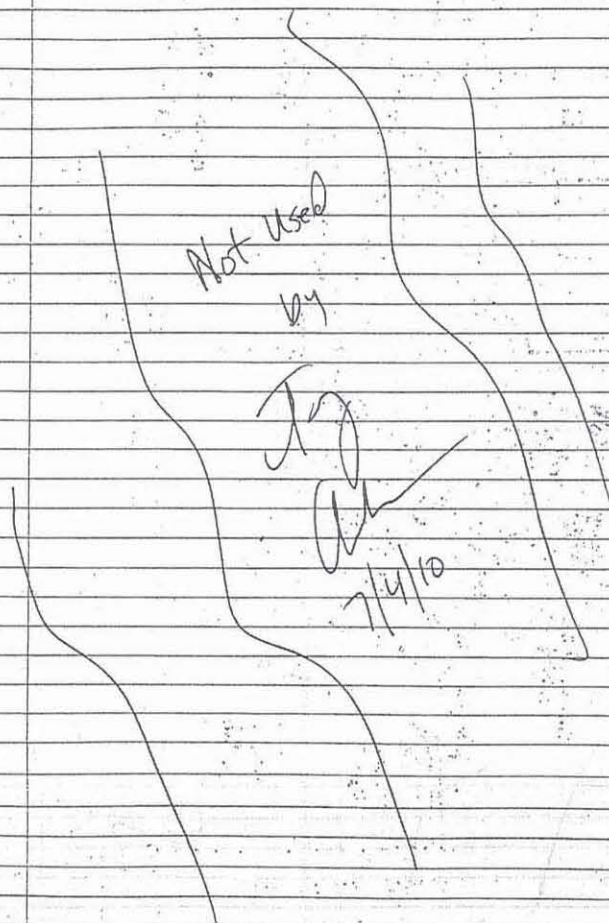
0800 Derrick, Adam, and I visited MCC Recycling and the US Oil Recovery property located at 200 N. Richey. We walked the perimeter fence of MCC Recycling first located at 200 Richey (not North!). The property appears to be abandoned. On the west side of the property we encountered an open gate with no warning signs. I saw a oily path (shiny grass and sheen on water drops) leading from this gate to within 5 feet of the Bayou. We entered the property through the open gate and followed the oily path to a small concrete walled building. Oily water was present on the floor of this building and was discharging onto the ground outside of the building through a door way that faces South. The oily water in the building appears to be coming primarily from a 2 1/2 inch diameter steel pipe located at the SE corner of the building. However, the room appears to be a pump house and there is grates and other possible areas in the floor that water could be coming from. From now on I will refer to structures according to nomenclature on the following page. I got the names of structures shown on the map from a figure that I found in the northernmost office in the office building at USOR.

J. A. H. 7/4/10

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Terry Andrews 7/4/10





7/4/10 Terry Andrews notes

- 0807 Took photograph 01. View is looking north at pump house with oil leak. The stained grass led from the door and then traveled to the sidewalk at a point on the far left of the photograph.
- 0808 Photo 02 - View looking down sidewalk where oily water had obviously traveled (stained grass + shingles) oil is visible on sidewalk. Oily pathing leads to the open gate and then to the bayou beyond. View is to the west.

- 0809 Photo 03 - View inside pump house. Oily water appears to be coming from pipe in SE corner (right side of photo)

I climbed up the stairs to a sludge press which is attached to a large AST (primary digester) and took the following photographs.

- photo 04 - looking east at old sand filter and clarifiers

- photo 05 - looking south at new sand filter

- photo 06 - looking southeast at old sand filter in foreground. note cracking tower (?) in background behind AST (blue).

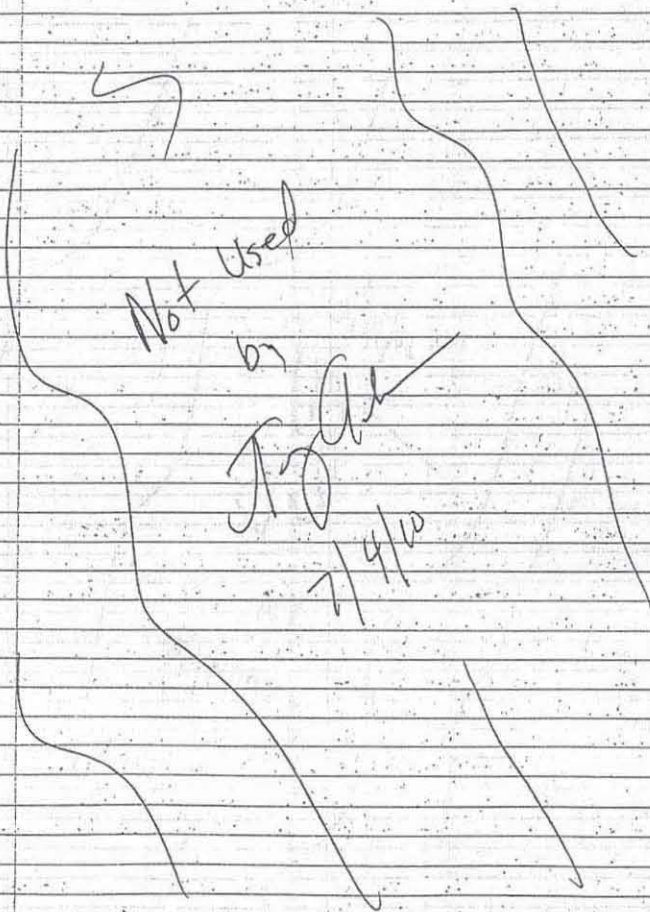
- photo 07 - looking southwest at sludge thickener. Wall of Primary Digester is far right of photo. Pump house with oil leak is behind wall.

- photo 08 - view looking southwest at top of primary digester. Freeboard is estimated to be approx 3 feet. No visible oil.

- photo 09 - View looking northeast at NE corner of property

- photo 10 - View of new sand filter. Leak from structure is occurring directly behind personnel and flowing north across road to perimeter fence.

TJ Andrews 7/4/10



7/4/10

- 0816 I walked down to new sand filter structure and saw a leak that appears to be occurring from the bottom of the wall located near the NW corner of the structure. Clear looking water is flowing from a crack in the concrete at the base of the wall. The water is then flowing into some grass and then exiting out onto the road and then grass to the north. Photo 11 is looking south at leak. Photo 12 is ~~not~~ looking north at path of leak.
- 0817 I then walked over to the large structure where the aeration basins are located. Photo 13 is of pipes leading to the aeration basin/digester structure. There are two large clarifiers located on the north side of these structures. Each of these clarifiers has pinkish/red colored water in them. The water level in both is ~18 inches below the discharge weir level. There is about 2.5 feet to 3.5 feet of freeboard above that. Photo 14 is looking ~~NE~~ at clarifier 01 (eastern one). Photo 15 is looking NW at clarifier 02. There was brownish looking water and visible sludge in both of the digesters that lie on either side of the aeration basins. Freeboard in the east digester was approx. 8 feet and freeboard in the west digester was approx 10 feet. I couldn't tell how much water was in the covered aeration basins.
- We then walked past what appears to be a cracking tower the the south east of the digesters. We then looked in several small office buildings. One of the buildings held ~50 boxes of files with "US Oil Recovery, Guatemala, Klaus" written on them. JAG 7/4/10

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7/4/10 Terry Andrews Notes

0820 I then looked at a small blue metal building that was falling apart. It has many holes and appears to be rusting very badly. It has a large poly tank inside that does not look like it is leaking. This looks like an acid storage shed to me. Photo 16 is looking southeast at shed. Photo 17 is another view (slightly different angle). We then walked through high grass along the northern boundary of the property. Photo 18 is of Clarifier #1. Photo 19 is looking west along perimeter fence (north boundary).

On the way, we walked by the north end of the old sand filter and I collected a photo 20 of the sand filter looking south. Freeboard in the filter was approx 4 feet in both sides. Then we walked back to the pump house with the oil leak where we started our visit. Photo 21 is of the area where most of the water seems to be coming out of the square box like metal thing on the far right of the photo. A 2 1/2 inch pipe is cut off here and oily water can be seen flowing from it and onto the floor of the building.

0847 Photo 22 is of oily water ponded just outside of the pump building.

Photo 23 is of oily water on floor of pump building.

0848 We then left the property by going out the unlocked gate. We shut the gate behind us as best that we could (no lever or lock on gate). Photo 24 is of oily path leading along sidewalk to the footbridge over the bayou. Photo 25 is of the bayou looking north from the footbridge. No oil or sheen was visible in bayou.

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July 4, 2010 Terry Andrews notes

0898 We then walked along the perimeter fence on the east side of the US oil Recovery property located at 200 North Richey. We didn't see any signs of contamination leaving this side of the property. We encountered an open gate located on the sidewalk near the foot bridge and entered the property. There were no warning signs and the gate was unlocked and open. Photo 26 is looking west at open gate that is used to enter the property.

On this property we saw three large clarifiers. The first clarifier that we saw is nearest to the bayou. It had a freeboard of approx. 3 feet and had brownish colored water - no oil or sheen.

0903 There is a large concrete structure located on the far north end of this property near the road. This structure appears to be some kind of a pump station as there are several large pipes leading into and out of it. We saw three poly drums in this area. Two drums were full and were labeled as "207th ammonia".
"Aqua Ammonia 207th".

One of the drums had a small poly sample bottle sitting on it. The bottle has a brown liquid in it and has "USOR 4-1" written on it with a permanent marker.

Photo 27 is looking east at concrete structure and drums. Photo 28 is a close view of drums.

Photo 29 is another view of the same. Photo 30 is close up of sample bottle. The other drum was empty. Photo 31th is looking southeast at the first clarifier (Intermediate Clarifier) Photo 32th is looking at the trickling filter that is located on the

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7/4/10 - Notes by Terry Andrews

Far west part of the property.

We then looked at the Primary clarifier. It has oily looking water. The water had an area of oil like material floating on it in the southern part of the tank and a sheen over the rest. The freeboard in this clarifier was approx. 7 feet. Photo ~~33~~³³ is looking south at the Primary Clarifier. Photo ~~34~~³⁴ is at the weir. Photo ~~35~~³⁵ is of the wall of the clarifier showing a PVC piping into the impoundment. We then walked towards the lagoon and encountered a tote on a stand. The tote was labeled "SWT 5350E". Photo ~~36~~³⁶ is of this tote. We then left the property closed the gate and headed back to the site.

0944 Made site walk. Took photo ~~37~~³⁷ of parking lot area. EARS Team is steam cleaner area near sump.

13:48 Watched START Team remove cover from one of rolloffs located with the large group of rolloffs in the SE portion of site. Waste is very wet and rolloff box is ~ 1/2 full. Photo ~~38~~³⁸ is of inside of rolloff. Photo ~~39~~³⁹ is of roll off (south end of maze) with cover rolled back. Photo ~~40~~⁴⁰ is of 6 inch PVC line that runs from the northern part of the facility to the SE corner of the property. Photo ~~41~~⁴¹ is looking east of line. Photo ~~42~~⁴² is at the SE corner of 43 the property. Line extends off property. Photo ~~43~~⁴³ is View of parking lot pond area. Photo ~~44~~⁴⁴ is View of sump and pile of grit that was moved from the sump.

The teams continued to work all day (till 7:00 PM) pumping off secondary containment areas, assessing roll-offs + waste, scanning documents. TJ

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7/4/10 Continued - Notes by Terry Andrews

From 16:00 to 17:30 we had a meeting and discussed activities. At this point in the project we have 10 free tanks on-site. 9 of them are full and we are currently pumping into the 10th one. We identified action items that included:

- collect water samples to dispose of collected fluids.
- collect water sample of discharge from retention pond.
- fix fence and put up signs (warning signs).
- keep assessing roll-off boxes and stored wastes.
- keep working 7-7 (one person watching site at night)
- keep pumping off water to free tanks - In case it rains again.

I left site at 20:00. Mr. Raymond Danton, Eagle SWS, is watching site tonight.

7/5/10

Arrived at site at 07:45. Raining. Worked on site notes + photographs.

Collected two photos of START team measuring oil levels in ASTs.

Still pumping water from secondary containment area.

By 9:30 it had stopped raining. We handled the rain well and continually pumped water from the parking lot collection area.

The START team has two people scanning documents in the northmost office. The START team

also has two people assessing the roll-offs. The START team also sampled the surface water from ~~the retention pond~~ the retention pond.

They collected the sample where the pond has been discharging. They planned to analyze the sample for VOC, SVOC, and metals (22).

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7/5/10 - Notes by Terry Andrews

The ERRS team continued to pump water from containment areas and worked on getting bows and covers on roll-offs. At this point we have 10 frac tanks (20,000 gallons) each that are full. The fence break was repaired. Work stopped at the facility at 0700 PM and I left at 8:00 PM. Photographs 01-03 collected of northern sec. containment area.

0800 I arrived at site at 0800. Personnel at site include:

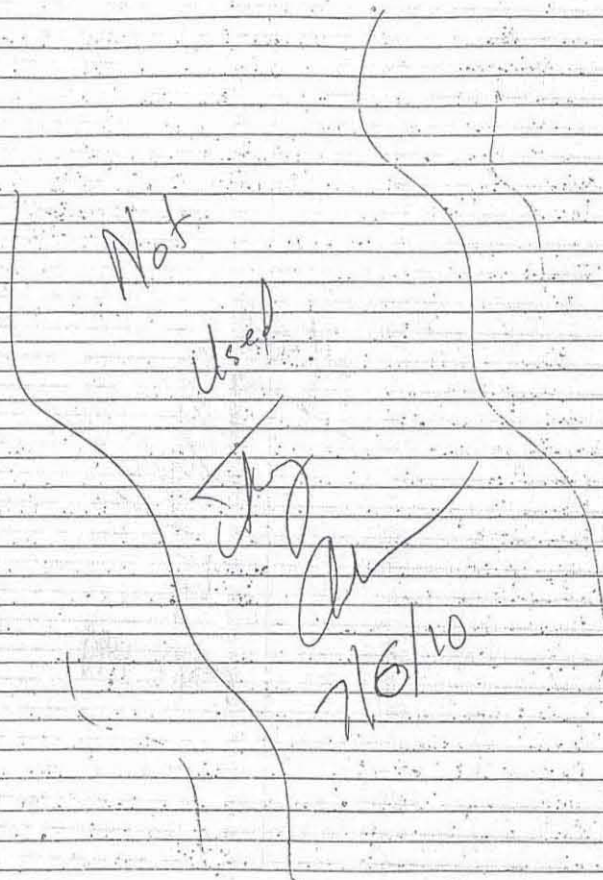
Eagle - Gary Babb, Daniel Bards, Trinidad Acis, Viviane Ganceler

Shaw - Stephanie ~~Battling~~ Lavinghouse

Weston - Rebecca Ayers, Derrick Cobb

1342 Left site at 11:00. Back at 13:42. Everyone is working. Water sample of retention pond was submitted this morning (07:45) to lab. ERRS team is performing roll-off box assessment to determine what is needed to "button these up" appropriately. Doc. scanning is continuing. Weston brought a new guy (Derek Chernick) on board to help manage files. Olga Solines came out after lunch and bought me a computer. I found out from Ed St James that the properties east & west of the bayou is known as MCC Palging.

1500 Walked around site and took some pictures. Photo 01 is of oily water still seeping down well onto ramp in the northern part of the USOR facility. Photo 02 is of the bays that were oily and where oil and/or emulsions were ~~draining~~ ^{draining} out onto the parking lot area on July 2, 2010. We have pumped down and pressure washed parts of these bays. Photo 03 is of the treatment secondary containment area. This area was overflowing oily water on



on July 24³ 2010
 July 2, We pumped this down ~~off~~ ^{to} to prevent discharge of oily water.

Photo 04 is of the walkway between the Secondary containment for the treatment area and the ASTs.

Photo 05 is of the AST area (and treatment) Secondary Containment. This area is very oily and was discharging oil onto the parking lot on 7/2/10. Notice Shreen.

Photo 06 is of the acid tank + its Containment area
 Drawing of containment areas:

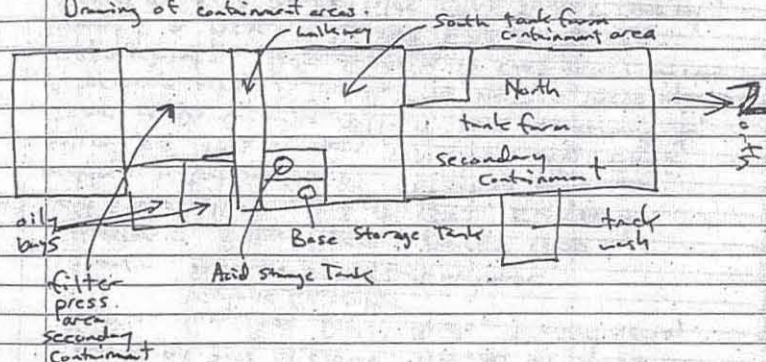


Photo 07 is of the base (caustic) storage tank + its Containment area.

Photo 08 is of the filter press area secondary containment. This is covered but very oily.

Photo 09 is of the loading area east of the South tank farm containment area.

Photo 10 is of the bags located east of the filter press sec. containment area.

Photo 11 is the parking lot area. Photo 12 is of the truck wash area. Left site ~ 7:00 PM

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713-443-6089

Here ~ 7:30. Rain.

10:30

Elizabeth Guynn, HCPHES, came by 10:30 and we traveled down to the SE corner of the site. She told me that the small fenced area just east of the SE corner fence is the USOR lift station that handles process water and sanitary. She said that she thought that it was shut down by the injunction. Then we drove over to the entrance to the 200 Richey site and parked at the south entrance. Ms. Guynn told me that there has been numerous discharges (land) from the lift station and it had included process water. We walked down the bayou and she showed me the PVC pipes that USOR had placed across the bayou. I took two photos of this. Then we looked at the outfall structure located on the west side of the bayou. She said that ~~there~~^{she} they weren't sure if the valve is closed or not. We then looked at the two releases that we saw on 7/4/10. The release that I described as coming from the new sand filter on 7/4/10 looks worse. The water looks black and the ponded water is black. The grass has also died where the oil release occurred from the pump house. I collected several photographs.

1:00 PM

We came back to the USOR and talked to Adam. Ms. Guynn says that USOR put hazardous waste (sludge from laboratory) in the chlorine contact unit (what I was calling the new sand filter). That means that the water is draining from haz waste. Ms. Guynn says that it is probably from the hole that the facility supposedly knocked into the outfall at the structure to illegally dispose of wastewater. *JP* 7/7/10

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Adam told us that it would be easier to respond if the county and TCC called the release into the NRC so Ms. Guyon called the NRC and reported the release. I helped explain the release to the NRC receptionist and at the end he asked for my name, which I gave him.

224pm - Adam told me that they were going to handle the MCC Recycling Site with the ongoing ER at ~~the~~ ^{the} USOR.

I collected the following photos while walking with Ms. Guyon. Photo 01 is of USOR pipes (white/blue PVC pipes) going over Vince Bayou.

Photo 02 is looking at pipes attached to bridge with nylon straps.

Photo 03 is of lift station that has been known to overflow. It is located on west side of MCC Recycling just north of old intermediate clarifier.

Photo 04 is close up of the lift station in Photo 03. Water level is ~ 3 inches below grate. This has been known to overflow during precipitation events.

Photo 05 is old lift station where MCC had placed an oil/water separator. It is gone now.

Photo 06 is of pumps located at old lift station in Photo 05. This is seeping liquid.

Photo 07 is of valve box between the primary clarifier and the trickling filter. Ms. Guyon says that this water level is connected to the water level in the primary clarifier (the one with oil in it). And it will overflow before the clarifier. Freeboard here was approx. 3-4 feet.

Photo 08 is of dead grass from oil spill on the west bank of Vince Bayou. ~~Oil had led to~~ The dead grass led from the pump house to here.

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7/7/10 - Notes by Terry Andrews

Photo 09 is looking west at the dead grass that shows where the oily water discharged from the pump house (blue building) out the door and to the bayou.

Photo 10 is of the oily and dead grass outside of the pump house.

Photo 11 is of the east facing door of the pump house, a lesser amount of staining was present here.

Photo 12 is of the apparent source of the oily water in the pump house that discharged last Friday to the bayou.

Photo 13 is of the sludge thickener/clarifier. After concrete wall is relatively new - freeboard is ~ 18 inches.

Photo 14 is of lift station #1 - this controlled flow of water between aeration basins, digesters, and clarifiers that were built in early 1980's. Water level is ~ 4 inches lower than it was on 7/4/10.

Photo 15 is looking inside office building at MCC Recycling - approx. 50-60 boxes that look like file boxes are in building.

Photo 16 another view inside locked office building.

Photo 17 - lift station #1

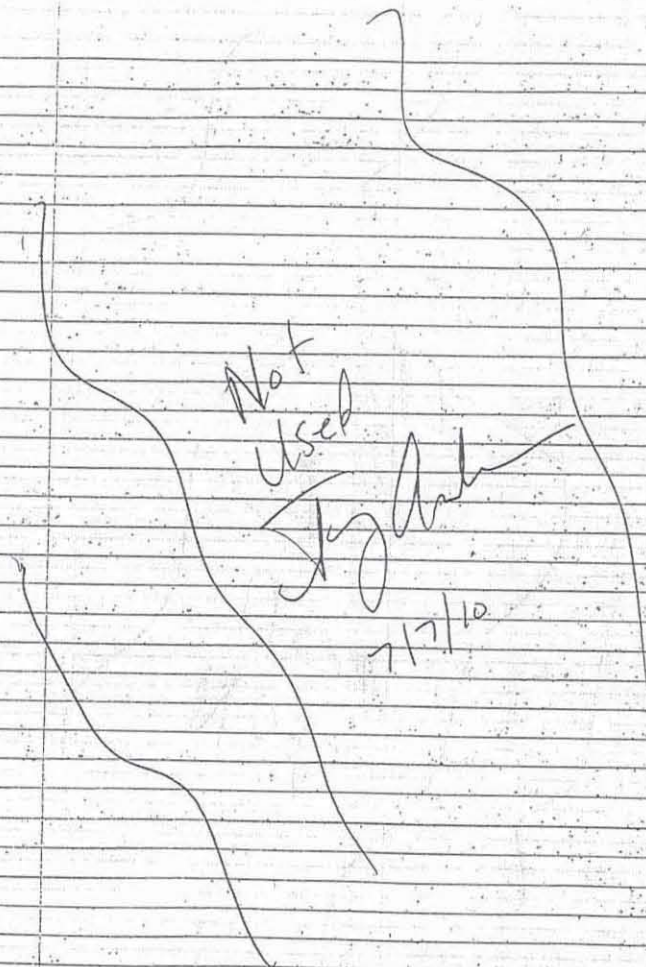
Photo 18 - black stained water down gradient of ^{surfacing} leak at NW corner of the Chlorine Contact Chamber (CCC). Water (liquid) is flowing from left to right across concrete road, entering grass area, and then flowing west through grass to NW corner of property.

Photo 19 - black stained liquid next to CCC.

Photo 20 - dead grass (infected from oil spill) on west side of pump house leaking oil/water.

Photo 21 - Vic. of pump house with dead grass around it.

TJA



7/7/10

Photo 22 is of water discharging at northwest corner of property (MCC Recycling). This is where the water draining from the CCC area ~~is~~ runs or flows off site.

Photo 23 is looking north at bridge over bayou. The post in right side of photo is the corner post for the northwest corner of MCC Recycling. Water is flowing from the property into the grass area and then into Vireo Bayou.

Photo 24 - looking east at grassed area where runoff from the CCC is flowing.

Around 4:00 PM, the ERRS team brought three frac tanks into the MCC Recycling property and began pumping liquids from the CCC and the oily pump house. Pumping continued till 7:30. They are pumping from the SW corner of the CCC and as they pump the liquid level is dropping uniformly across the CCC. By 7:30 they lowered the liquid level 30 inches and filled two frac tanks (40,000 gallons). The hole in the outfall that we think is causing the surfacing problem is still not visible. The ERRS team also pumped to enter in the oily pump house down and are working on placing valves on the pipes that are clogging the oil release. I left site at 7:30. The USOR site looks good and they are pumping rain water that is collecting in the parking lot into north tank farm sec. contained.

7/8/10 - Raining!

I arrived at 7:25. ERRS + START Teams are here and working. They are pumping the parking lot area into North Tank Containment Area. They are pumping the CCC down into the 3rd frac tank. I took 12 pics of the USOR site.

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of outfall area of CCC. From watermark it looks like liquid level has been reduced (lowered) about 18" from last night (7:30 pm) to yesterday morning. Photo 13 - is of the CCC and shows the outfall weir. To the left of the weir is the water level in the outfall area. At 7:30 last night the water level was level with the weir elevation. The drop shows the amount of fluid that has discharged from the outfall area of the CCC (surface discharge). The water level to the right of the weir shows the pumping level that was reached last night at 7:30.

Photo 14 - looking into CCC - notice oil & sheen in outfall area.

Photo 15 - surface seepage area - flow has visibly been reduced by pumping the waste out of the CCC.

Photo 16 - surface seepage area - flow is reduced from yesterday morning.

Photo 17 - surface seepage area, next to wall of CCC. Flow is reduced from yesterday morning.

Photo 18 - surface seepage area.

Photo 19 - Vince Bayou has risen to NW corner of MCC Recycling (East side).

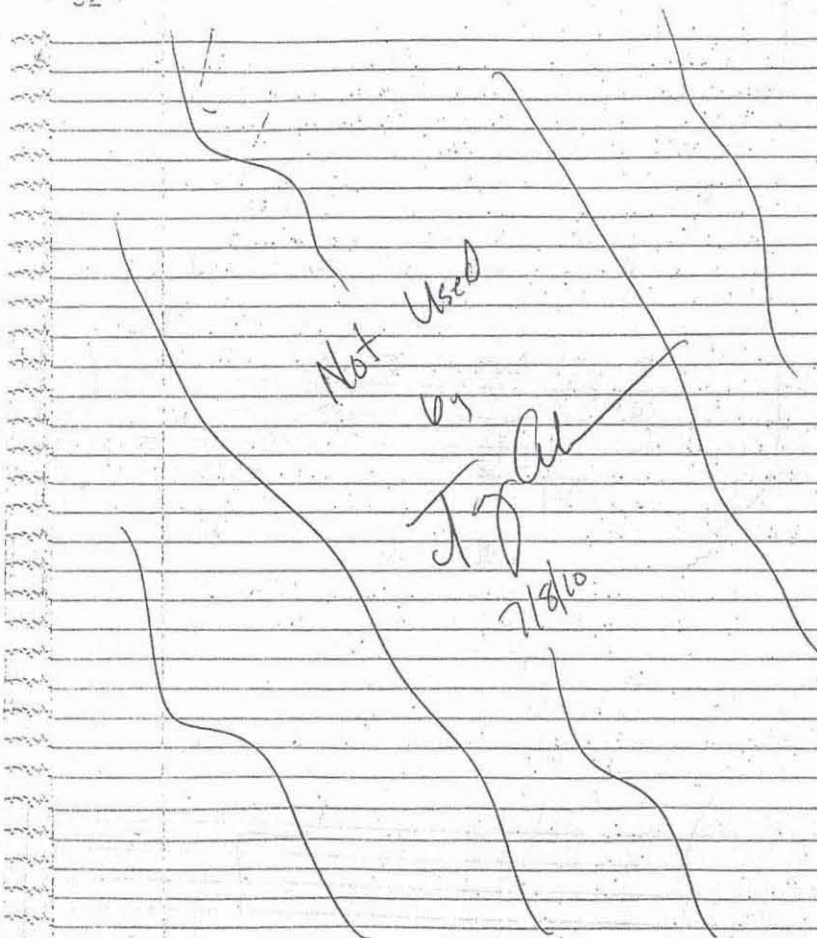
Photo 20 - Vince Bayou at flood stage adjacent to site.

Photo 21 - View of NW corner of MCC Recycling (East side). Bayou has risen to corner of site.

Photo 22 - View of Northwestern area of the east side of MCC Recycling.

Photo 23 - View of area between MCC Recycling east side and the Bayou.

12:08 I looked at the CCC area and collected some photographs of this area and the MCC Recycling site. TJ 7/8/10



7/8/10

12:08 photo 24 - View looking at inside of west well of the outfall structure. Hole is visible near corner of the outfall. It appears to be allowing liquid to flow back into the outfall.

photo 25 - View looking west at outfall part of the Chlorine Contact Chamber (CCC). Hole in structure is visible to the left of the green hose and just above the water line.

photo 26 - View of outfall with hole on back wall.

photo 27 - View of CCC weir.

photo 28 - View of outfall of CCC.

photo 29 - View of northwest part of the east half of MCC. Flow from the surfacing seep drained into the ponded area on the road and then crossed the road and flowed to the NW corner of the property.

photo 30 - View looking West from CCC.

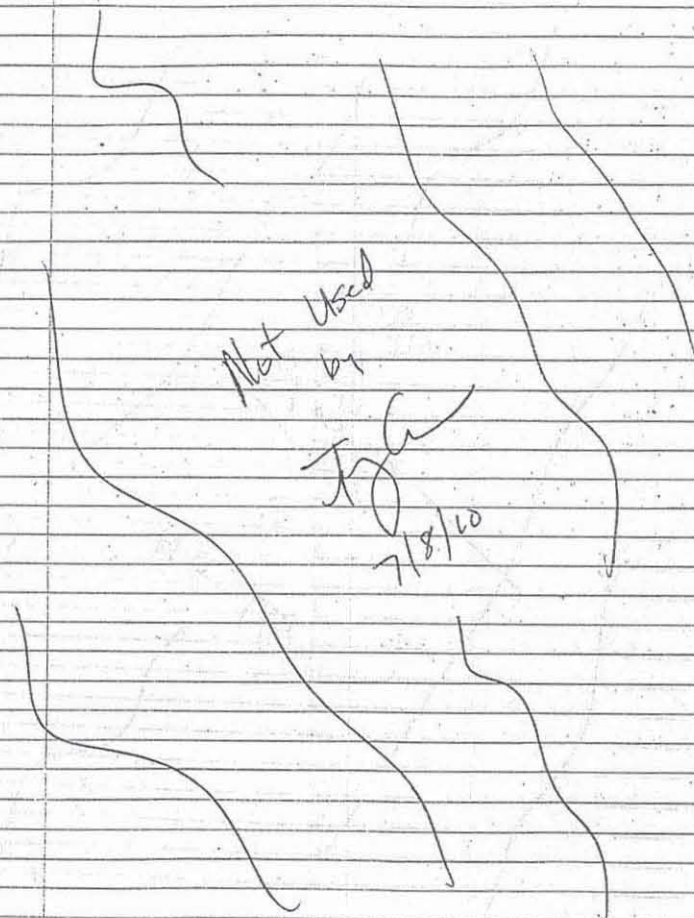
photo 31 - View plugs that have been placed in pipes to seal oily water discharge from pump house.

photo 32 - View of "lift station #1" that is discharging into ground (over-flowing). I told Adam about this when I saw it at 12:25.

photo 33 - View of lift station on West side of MCC. Freeboard is approx. 16".

2:00 Visited Elizabeth Anglin at the HCPHES. She gave me some drawings of the CCC.

3:00 I returned to site. No pumping is ongoing at MCC Recycling Site. Pumping from free tanks containment areas to free tanks is ongoing at USOR. Adam and Derrick (START TEAM) checked on MCC Recycling areas that J.D.



7/8/10 Continued Notes by JZC

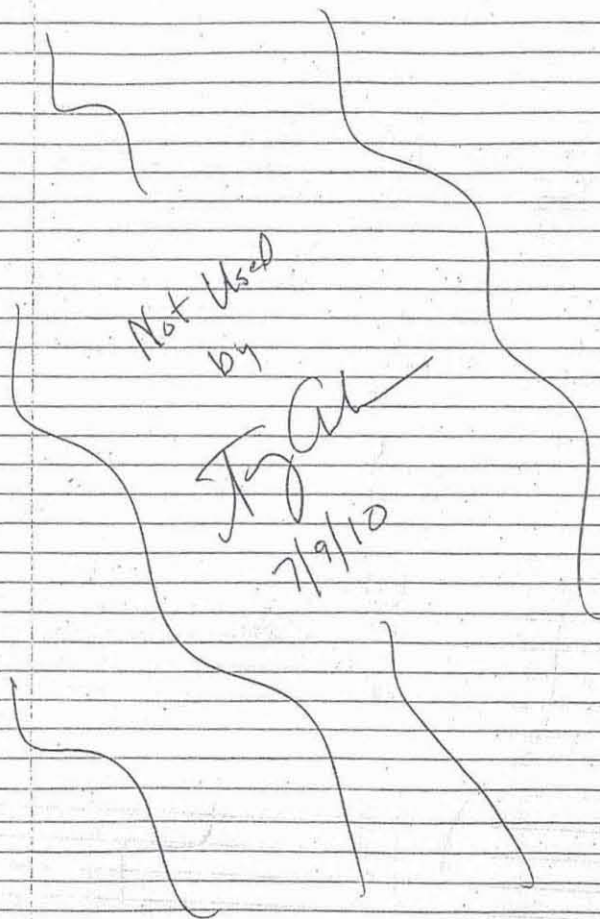
May be overflowing.
Left site at 6:15

7/9/10

Here at 0800. Adam reports that everything is going well. Plans to day to start going thru damaged and totaled wastes. Intent is to insure that wastes are stored properly - physical stability and chemically compatibility.

0900 I walked around site. I noted that the North + South Tank Farm Containment Areas are both full. The ERRS Team is pumping from ponded area in parking lot. I noted that the sawdust pile has a discharge that looks stained and has a screen. I mentioned this to Adam. I then went over the MCC Recycling area. I noted that the surface seep area is dry. I also noted that the outfall area of the CCC has liquid in it almost to 2 foot below the final weir, which is about the elevation of the hole. I called Adam and let him know this immediately. I then noted that the concrete trench (that leads to the gate valve where flow is released to the CCC) is closed and almost empty. I then returned to the site office. Photos are labeled as follows:
Photo 01 - view of sawdust pile with discharges. USOR
Photo 02 - view of sawdust discharge. USOR
Photo 03 - View of water in tank farm secondary containment. USOR
Photo 04 - View of parking lot pool - looking South. USOR
Photo 05 - Sawdust discharge - note screen. USOR
Photo 06 - sawdust screen. USOR
Photo 07 - sawdust pile with boom. USOR
Photo 08 - South Tank farm secondary containment. USOR

JZC 7/9/10



7/9/10 - Notes by Terry Andreas, continued

Photo 09 - View of water in South tank farm secondary containment area, USOR.

Photo 10 - truck loading bay, USOR.

Photo 11 - oil on water in truck loading bay

Photo 12 - water collected in truck loading bay from yesterday's rain, USOR.

Photo 13 - truck wash area, USOR.

Photo 14 - truck wash area, USOR.

Photo 15 - View of water in outfall area of CCC. We had this dewatered yesterday. Water level is about 2 feet below final weir (in foreground of photo) MCC.

Photo 16 - View looking west at outfall area of CCC. Liquid is trickling from hole in wall. MCC.

Photo 17 - View of east wall of outfall of CCC. MCC.

Photo 18 - View of CCC loading South MCC.

Photo 19 - View of area where seepage was occurring on July 4, 7, & 8, MCC. Surface seepage has disappeared. MCC.

Photo 20 - View of former seepage area. Had been black and wet earlier. MCC.

Photo 21 - View of concrete trench that leads from digester/classifier area to the CCC. MCC.

Photo 22 - View of "lift station #1" - currently discharging. MCC.

Photo 23 - View of discharge from lift station #1 where it crosses sidewalk to the SW of lift station. MCC.

Photo 24 - Grassed, low area south of the lift station #1. MCC. TGA

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7/9/10 Continued - Terry Adams Notes

Photo 25 - View of surface drainage pipe where area drains south of "lift station #1" MCC

Photo 26 - Overhead view of lift station #1. MCC

Photo 27 - View looking east. Clarifier #1 to the left, digester #1 to the right. MCC

Photo 28 - view looking north-east. Clarifier #1 in foreground, Clarifier #2 in background. MCC

Photo 29 - View looking north. Clarifier #1 on right, Clarifier #2 on left. MCC

Photo 30 - View of NW corner of clarifier #2, MCC.

Note - our face tanks (Red with Adler on side) are behind sand filter structures. MCC

Photo 31 - Large tower is oxygen tank/system from former wastewater plant. First building to the right (light gray color, whitetrim, gray roof) - near center of photo is where records can be seen inside. MCC Building to the right with open door has misc. parts and trash inside. MCC

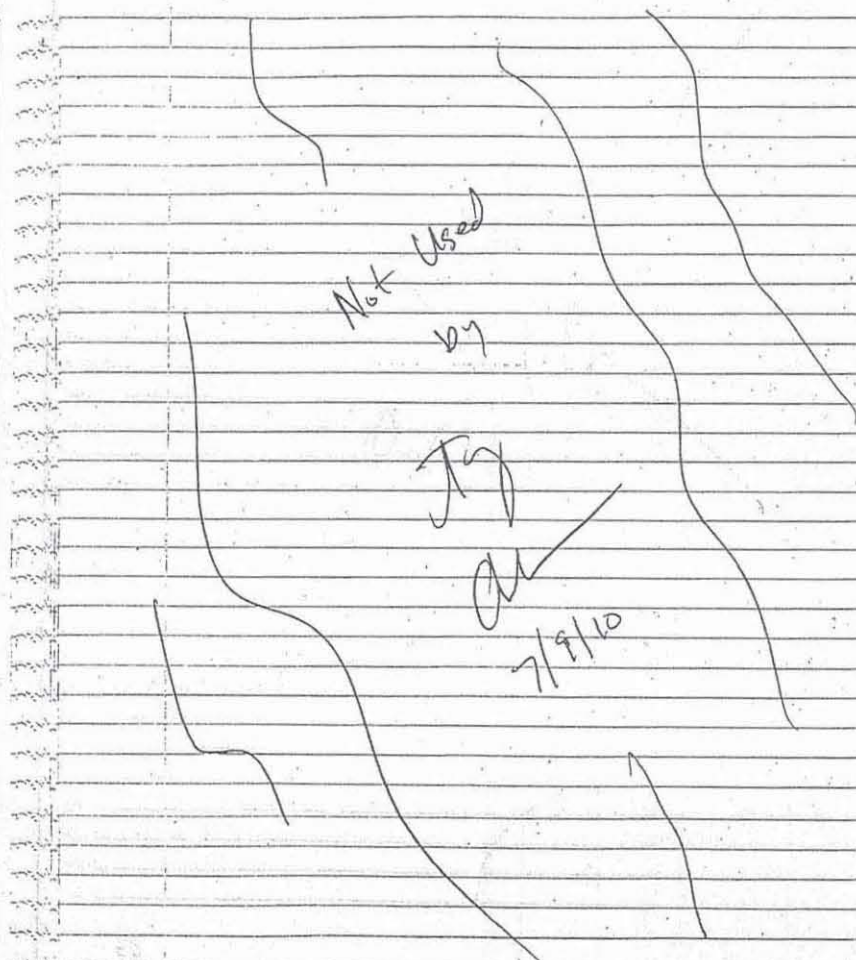
Photo 32 - blurred photo but you can read "USUAL GUATEMALA (KLAUS)" on the box on the right side of the photo. Photo was taken of stacked boxes that can be seen by looking inside building identified in Photo 31. MCC.

Photo 33 - view of building where you can see records inside. Building is in east part of MCC Recycling area. Photo 32 was taken looking inside building at window with screen laying against wall. MCC

Photo 34 - View of discharge area on ground near pump house. MCC

Photo 35 - View of discharge area next to pump house.

Photo 36 - View looking north at CCC (also "2 tank") You can see that we have pumped the structure down about 2 feet. Sump at NW corner has been stopped.



7/9/10

Photo 37 - View of sand filters, MCC

Photo 38 - View of NW corner of CCC. Note absence of surface seep.

Photo 39 - View of surface seep area. No seep is occurring now.

11:15 After collecting these photos I met with Adam and told him about the lift station discharge. He said that he would look in to it. I also told him about the sand dust pile discharge. During the afternoon, Adam and I went over to the ~~CCC~~ MCC and looked at the lift station area. It has stopped discharging and since there doesn't seem to be any rain in the forecast, he decided to leave it alone till morning. I agreed, because who knows where to put it? We also looked at CCC and he told me that he would have it pumped down at least 2 feet to prevent it from reaching the hole.

17:30 I left site and went to office.

7/10/10

0745 Arrived at office at 0715. Arrived at site at 0745. Looked at MCC Recycling area. The fluid level is just below the hole. No seepage is occurring outside of the structure. The fluid level at the Lift Station #1 has fallen about 2 inches and is not discharging. I collected the following photographs

Photo 01 - View of new tarp on roll-off box in parking lot.

Photo 02 - View of new tarps on roll-off boxes next to sand dust pile

Photo 03 - View of workers installing new bows on roll-off box.

Photo 04 - View of new tarps on uncovered roll-offs in far north part of facility

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7/10/10 - Notes by Terry Andrews (continued)

Photo 05 - View of secondary containment area around bioreactor. View is of hole in containment wall at NW corner of bioreactor. There appears to be a small seepage from the secondary containment area.

Photo 06 - View looking South at roll-off boxes to the east of the bioreactor.

Photo 07 - View of workers (EARS team) placing new boxes and tarp on roll-off boxes. Frac tanks #A2891C and A2895C were transported to site by the EARS team and have been filled from waters collected onsite. These tanks are located at the far north part of the parking lot.

Photo 08 - View of frac tanks #A1181 and #A2801C parked near outer curb in parking lot.

Photo 09 - View of workers placing new tarp on roll-off box.

Photo 10 - View of ~~frac~~ frac tanks #A1331C and #A913B located near trade bags.

Photo 11 - View of frac tank #A1089 that is parked just south of #A1181 and #A2801C. Frac tank #A2800B is parked

Photo 12 - View of frac tank A911B (parked just south of #A1331C and #A913B).

Photo 13 - View looking South at frac tanks #A2853, #A2798B, and #A403NO. Frac tanks #A850 and #A581C are parked behind these three tanks (to the South).

Frac tanks labeled A1477B and A1475B are parked in the far north part of the parking lot. They were here when the EPA and I entered the facility on July 2, 2010.

Photo 14 - Over at the MCC recycling area. Photo 14 is view of frac tanks #A1881RBC and #A2867C parked near the CCC.

Photo 15 - View of frac tank #A2858C parked near the CCC.

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7/10/10 Notes by ~~Terry~~ ~~Andrews~~

Photo 16 - View of pump and hoses that was used to transfer fluids from the outfall area of the CCC to the main contact area. Note - no signs of surface seepage except for a rust-colored stain.

Photo 17 - View of outfall area of CCC.

Photo 18 - View of outfall area of CCC.

Photo 19 - View of "Lift Station #1".

Photo 20 - View of "Sludge thickener clarifier".

Photo 21 - View of "Sludge thickener clarifier".

Photo 22 - View of locked gate and signs of MCC Recycling area - east half.

ERRS and START teams are performing the following today → placing new bays & taps on roll-offs
→ hazardous waste (inventory of waste drums)

15:20 There are 17 frac tanks located on the USOR and MCC Recycling Areas. We have filled all 17 with liquids from each of the two sites.

Frac tanks are arranged as follows:

South Parking Lot	North Parking Lot	MCC Recycling
A985P	A2895C	A1881RBC
A581C	A2891C	A2867C
A403NO	A911B	A2858C
A2798B	A913	
A2853C	A1331	
	A1089C	
	A2801B	
	A2800B	
	A1181B	

15:30 Donna Phillips visited Site.

- 16:00

16:00 I did a walkabout. CCC outfall has been pumped down significantly. No releases. ~~Ty~~ ~~A~~

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7/10/10 USOR ER Site Notes by Terry Andrews

17:30 I left Site.

7/11/10 - day off, no activities

7/12/10

0800

I arrived at site. Adam reported no problems. Situation is as it was on Saturday. His team plan to finish the roll-off covers and they are going to collect samples from some of the large structures over at MCC Recycling. Full teams are here (EARS and START). From 8:45 to 9:30 I did a site walk and collected the following photographs.

Photo 01 - Roll-off box 1801 in SE part of site, looks like it is still leaking

Photo 02 - Close up of leak at Roll-off box 1801.

Photo 03 - Drums positioned under leaks at Roll-off box 25-93, also located in SE part of USOR site.

Photo 04 - View of parking lot pond. Note new tarps on roll-off boxes.

Photo 05 - view of new tarps on boxes.

Photo 06 - saw dust pile is still discharging a fluid that is running into parking lot pond.

Photo 07 - View of seepage from saw dust pile.

Photo 08 - view of oily bags.

Photo 09 - view of oily bag in front of secondary treatment (belt press area).

Photo 10 - view of water/oil in secondary containment of south part of AST area.

Photo 11 - View of oily water in South AST area.

Photo 12 - View of truck unloading area.

Photo 13 - View of truck wash / chemical unloading area.

Photo 14 - View of secondary containment well around the bio-reactor - NW corner. Shows small seepage from containment area.

Photo 15 - view of secondary containment seepage.

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7/12/10 - Continued Notes by Terry Andrews

Photo 16 - View of north tank secondary containment area

Photo 17 - View of tank from roll-off parked along curb east of the AST area.

Photo 18 - View of MCC Recycling, west gate. It is locked and has warning signs.

Photo 19 - View of MCC Recycling, Chlorine Contact Chamber (CCC)

Photo 20 - View of Lift Station #1, MCC Recycling.

Photo 21 - View looking South east from Digester area, MCC Recycling. Houses are nearest residences to site.

Photo 22 - View looking south west from Digester area, MCC Recycling.

Photo 23 - View looking west from digester area, MCC Recycling.

Photo 24 - View of east digester.

Photo 25 - View looking north from Clarifier #1, MCC.

Photo 26 - View of chemical storage area offsite.

looking north east from clarifier #1, MCC.

10:00 Arrived 10, I left the site. Around 5:00 PM, I called Adam to see how things were going. He reported no problems, no incidents, no visitors. Enforcement folks from Reg. 6 (Kelly + Cindy) were there and were looking at documents. He expects to get analysis from frac tanks late tomorrow.

7/13/10

0800 Lem and I arrived at site ~ 8. I took him on a site walk. Site looked good with no changes from yesterday. In the drum storage area (waste), the START team was performing an inventory of the drummed waste. I took several photographs of drums that were leaking or had crystals growing on them (from leaks or spills).

Photo 01 is of drum with white crystals on side of drum

T. Andrews 7/13/10

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7/13/10 Notes by Terry Andreas (continued)

Photo 02 is of drum with residue on outside of drum.

Photo 03 is of precipitate from drum.

Then we looked at the bioreactor. I took several pictures here while the sun was on the east side of the reactor.

Photo 04 is of the east side near the southeast corner of the bioreactor.

Photo 05 is of the bottom of the southeast corner of the reactor (east side).

Photo 06 is of the west bioreactor (looking north).

Photo 07 is of the east bioreactor (looking north).

0900 We met Gary Fogarty and walked around the USOR and then the MCC Recycling Properties.

Photo 08 is of the concrete wall located at the large gate valve that allows water from a channel leading from the clarifier #2 to enter the CCC. A small flow of water could be seen flowing over the concrete wall in the channel. The gate to the CCC appeared to be open. MCC.

Photo 09 is of gate between clarifier #2 and the sand filter. It appears to be working and is closed (water color is different). MCC.

Photo 10 is of the headworks. View on top looking south. MCC.

Photo 11 is of the trickling filter. View looking southwest from top of headworks at MCC.

Photo 12 - same as photo 11.

Photo #13 - View looking south from top of headworks at MCC Recycling.

Photo 14 - View looking northwest from top of headworks at MCC Recycling.

Photo 15 - View looking northwest at USOR from top of headworks, west half, MCC Recycling.

1130 We called our tour and left the site.

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7/13/10 - USOR field notes, continued

1700 Talked to Adam Adams. He told me everything was going well. Hopes to get final tank analysis tomorrow. No incidents, no problems.

7/14/10

0730 I arrived at site, visited with Adam, did a quick site walk at USOR. Site looks like it did yesterday. Small discharge from sandblast pile. Small pond in parking lot. Adam told me about finding 2 acid drums with 2 basic drums.

0815 Donna Phillips and Linda Vasse, TCEQ, arrived and I gave them a site tour. I collected the following photographs during the tour. They left ~ 9:30.

Photo 01 - view looking at loading bay with stacked drums of hazardous waste (marked as flammable liquids). Drums are leaning badly.

Photo 02 - view of tank weeping from holes. Tank is located along the east side of the tank farm.

Photo 03 - view of white precipitate in pipe valve from tank.

Photo 04 - view of leaking roll-off.

Photo 05 - view of roll-off that is leaking in photo 04.

Photo 06 - view of computer + modem that we think was connected to security cameras.

Photo 07 - view of drawing in USOR lab.

Photo 08 - Another angle of drawing in USOR lab.

Photo 09 - View of creosote board in laboratory.

10:30 I then checked out the MCC Recycling site. Conditions were unchanged from yesterday. The fluid level in the at-fall area of the CCC was approx 3 feet below the weir elevation.

11:00 I left the site.

7/15/10

In office, checked with Adam in the morning and at 5:00 PM. Drum inventory going well. 409 drums have been inventoried so far. He mentioned that *TJ* 7/15/10

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7/15/10 - USOR ER Notes by Terry Andrews

some guy (dressed as a moving company employee) dropped by the office this afternoon and told Adam that he could be back tomorrow to pick up office furniture and boxes of files. He gave Adam a letter that is signed by Klaus Gonsler (as President of USOR) that authorizes him to remove the items from the USOR and MCC properties. The letter says to remove boxes of files that are not related to MCC Recycling or USOR. I called Charmaine Beckens and Jennifer Wheeler to let them know. I also talked to Kelly Parker and Nicole Beale. Jennifer emailed me a copy of the TRO (which I believe is still in effect as it is signed on July 2). Jennifer told me that their Attorney, Mr. Rock Owens, will try and get an extension to the TRO tomorrow.

7/16/10

- 0610 I arrived at site. Gates are locked with armed security present. I did not enter but returned to office to pick up a copy of the TREC Permit.
- 0700 I retried site. ERS team has 6 personnel on site, START team has 3 personnel on site. Security guard left at 0700. Adam arrived at 0705. I talked to Jennifer Wheeler about the TRO. She sent an email a few minutes later after talking to Rock Owens that confirmed. I then took several photographs of the office.
- 0800 I posted a copy of the TRO on the inside of the guard shack. Just inside the door I found a piece of paper entitled Employee Contact List. The following names and phone numbers were listed on the paper:
Bernard - cell #713 376 7517
Christine - cell #281-684-9408
and others. I took a photograph of the contact list.

7/16/10

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7/16/10 USOR ER Notes by Terry Andrews

0900 I did a walk around the USOR site. I collected numerous photographs.

1100 Adam told me that they have a drum count of 800! Approx. 200 of them have hazardous waste labels. I went out and took numerous photographs. They have tried to spread them out so they can inventory and segregate them. They have checked pH of numerous drums to see how reliable the labels are. They have found many inconsistencies between the labels and the drum contents.

Photos 1-6 are of the northern office and the boxes of files there. There are also two file cabinets with labels marked "manifests."

Photos 7-17 are of the rooms in the USOR office. Photo 18 is of the employee contact list that was on the floor of the guard shack.

Photo 19 is of the entrance sign to USOR.

Photo 20 is looking NW at the USOR office building.

Photo 21 is of the guard shack with the TRO taped on the door.

Photo 22 is of TRO.

Photo 23 is of pump station in parking lot approx. 50 feet SW of SW corner of office building.

Photos 24 and 25 are looking at totes stored in the warehouse at USOR.

Photos 26 and 27 are looking at black stained water in loading area - North part of USOR facility.

Photos 28 and 29 are looking at sludge and leak coming from roll-off box parked next to "truck wash".

Photo 30 is of liquid in "truck wash".

Photos 31-34 are of water in north and south tank farm - secondary containment areas. *Terry Andrews 7/16/10*

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7/16/10 - USOR ER Notes by Terry Andrews 79

Photo 35 - looking at leaking rolloff next to truck wash.

Photo 36 - view of oil floating in water in flooded secondary containment area (north end)

Photo 37 NW corner of USOR warehouse.

Photo 38 view looking north at NW corner of warehouse.

Photo 39 - View looking NW at the SE corner of the bioreactor. USOR.

Photo 40 - View looking south from bioreactor.

Photos 41 and 42 - View of drums stayed in warehouse for inventory project. USOR.

Photo 43 - View of room next to laboratory that is filled with single containers - USOR.

Photos 44 & 45 - view of laboratory - USOR.

Photo 46 - View of stormwater retention pond.

Photo 47 - View looking northwest at bioreactor.

Photos 48-66 - Various drums stored in USOR warehouse. Drums have been stayed so labels could be read and drum stability could be assessed.

Photos 67-69 - Views of stormwater retention pond.

Photo 70 - View of electrical box with lockout tag (placed there by ERRS team).

Photos 71 & 72 - View of Secondary containment area of south tank farm.

Photo 73 - View of truck bays with liquid.

Photos 74-76 - Views of drums and totes in flooded truck bay/loading area. Most are labeled as flammable liquids. Jg 7/16/10

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7/16/10 - Notes by Terry Andrews
Photo 77 - View of sand-lift pile - seems to have reduced discharge from two days ago.

It appears to be drying out.
Photo 78 - View of office building and parking lot curb. View looking South.

15:00 I left site. I checked in with Adam at 18:00. All is good.

~~7/16/10~~ 7/17/10 - Saturday
I checked in with Adam at 0800 and 1930.

7/18/10 - off, no messages from Adam - phone calls

7/19/10 - Talked with Adam around 5:00 PM. He said everything was going well. No incidents or visitors.

Still segregating drums. They began to dispose of liquids in free tanks today.

7/20/10 - Talked to Adam ~ 5:00 PM. He reported no problems. A total of 470 drums have been sampled/hazmat'd. 24 truck loads of water/liquid disposed so far.

7/21/10 - Talked to Adam ~ 5:00 PM. He reported no problems. Drum segregation should be done by end of day Saturday. Total segregation should take another couple of days. 185,000 gallons has been disposed so far. Harris County started their own security today.

7/22/10
Checked with Adam at 0800. Everything is going well. Went out the site at 1:30. Adams Adams is there for the EPA. The start team (Derrick Cobb and Jeff Greer) were busy sampling and segregating drums. The ER&S team (Gary Babb, Stephanie Livingston, and 4 workers) were busy pumping liquids from the 2-tank (CCC) over at MCC. The free tanks at MCC have been pumped out. Only two free tanks remain at USOR (except for the 2 that were there when we first got there). *TJA* 7/22/10

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7/22/10 Notes by Terry Anders

From 1:57 to 2:30 I took 28 pictures of the USOR & MCC site. I then met with Adam. I told him that the sand dust was still discharging and there was sludge next to the roll-off. I left the site at 2:45.

7/23/10

Picked up Bob Ritten at airport. Arrived at the site at 08:30. Adam finished the drum segregation. Total of 765 drums. Toured site until 10:50. Left site at 10:50

Photos taken on 7/22/10

- 01 - View of parking lot impoundment after several rains. No sheens or oil. View looking north. Note covers on all roll-off. Free tank has low PH water.
- 02 - View of parking lot at USOR looking south at 2 of the 3 free tanks are visible.
- 03 - View of drums placed on plastic.
- 04 - another view of drums on plastic.
- 05 - view of stormwater retention pond.
- 06 - view of leachate from sand dust pile.
- 07 - Free tank containing low pH water - to be disposed weekly or bi-weekly.
- 08 - View of containers in sludge press area.
- 09 - View of drums in sludge press area.
- 10 - View of south tank from containment area.
- 11 - View of sheen on water in containment area.
- 12 - View of water and sludge in containment area.
- 13 - View of water and oil and sludge in containment area.
- 14 - View of "truck wash" area.
- 15 - View of north tank from containment area.
- 16 - View of north tank from containment area.
- 17 - View of north west corner of tank farm.
- 18 - View of wall on north end of tank farm.
- 19 - View looking south at parking lot area. *TJA*

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Notes by Terry Anders

Photos taken on 7/22/10, continued:

- 20 - View of #1 lift station at MCC.
- 21 - View of #1 lift station at MCC.
- 22 - Same as 21
- 23 - View inside fan tank that formerly held Z-tank liquids.
- 24 - pumping from Z-tank at MCC.
- 25 - pumping from Z-tank at MCC - Eagle SWS proximal and Eagle SWS truck.
- 26 - View of outfall area of Z-tank (CCC)
- 27 - View of hole in CCC.
- 28 - back of fan tank.

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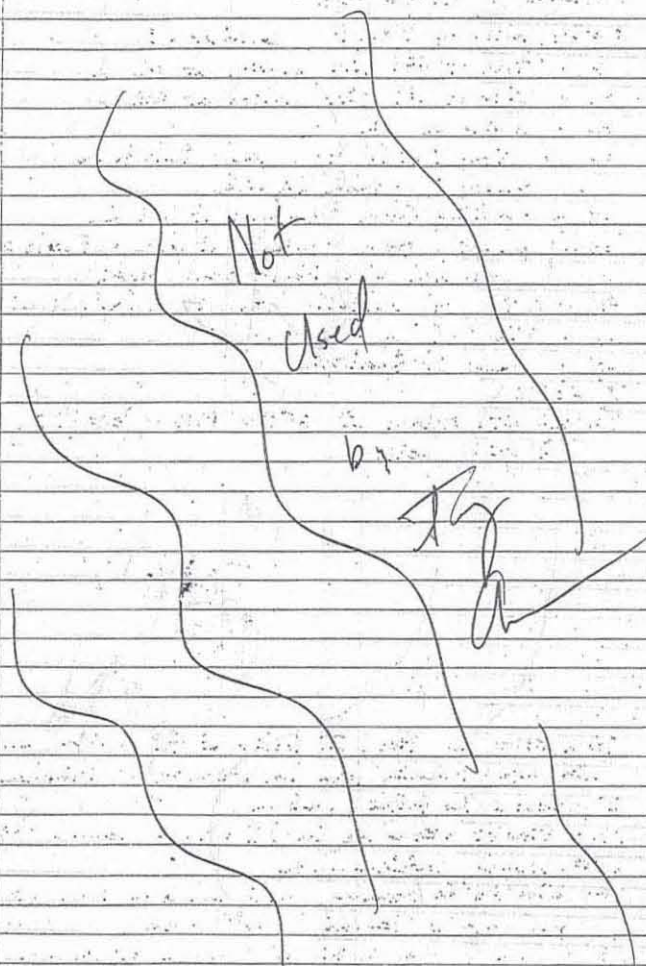
Checked with Adam at 05:00 Pm - everything is going well.

7/28/10

Arrived at site at 01:08. Rick Townsend (Receiver-713-838-2752) and J.C. Cowgill (Receiver attorney-713-838-2752) arrived just as I did. Adam and I took Mr. Townsend and Cowgill for a tour of the USOR and MCC facilities. We looked at the offices and all of the waste areas. We concluded the tour at 2:50. The EPA continued work after the tour.

From 3:25 to 4:00, I looked at the problem with acid water leaching from the secondary containment area. I collected the following photographs:

- 01 - View of area where low pH water is leaching from acidic secondary containment area.
- 02 - View inside secondary containment area from which low pH water is leaching - NE corner
- 03 - View looking west at east wall of acidic secondary containment area. Leaking is occurring at right end



7/28/10 Notes by Terry Andrews
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04 - View of sump in truck bay that is being used
to store low pH water.

05 - View of sump in truck bay with low pH
water.

I left the site ~ 4:15

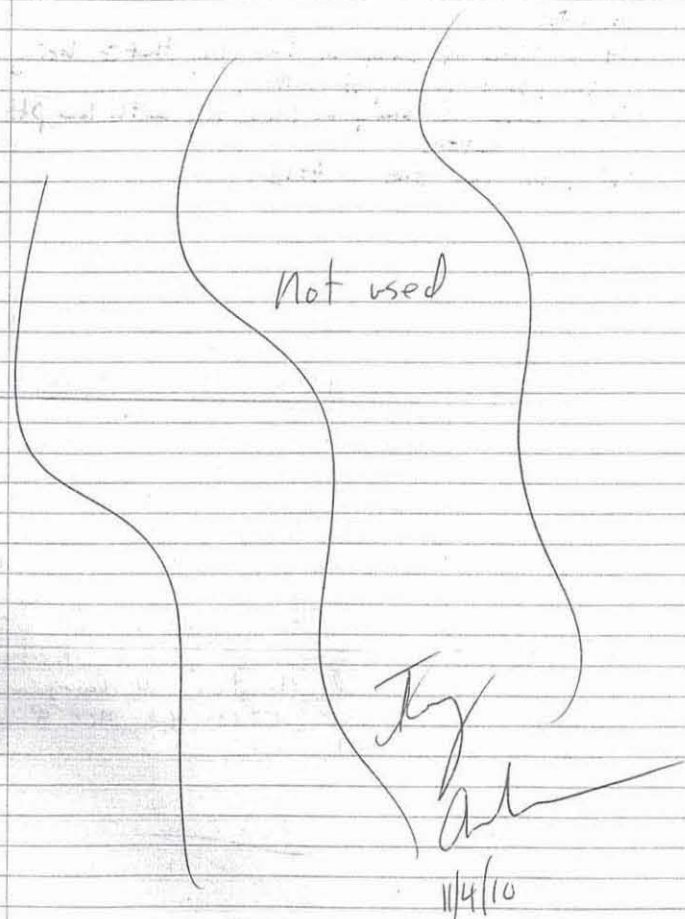
7/29 - 8/1

I did not visit the site. I talked to
Adam everyday around 5:00 PM. They finished
work at the sites on 7/31/10. No work at
the site on 8/1

8/2 - talked to Adam ~ 5:00 PM. He
confirmed that the ER was finished at
the site. All equipment was removed today
and everything was locked up and secure
when they left.

8/9 - 10:15 I walked around the USOR
site with Lem Tran and at 10:40 we walked
around the MCC Recycling. I took 39 photographs
at the USOR site and 10 photographs of
the MCC Recycling site. I saw no discharges
at either site and all gates and doors are
locked and secure. Left the MCC Recycling
site at 11:00 AM.

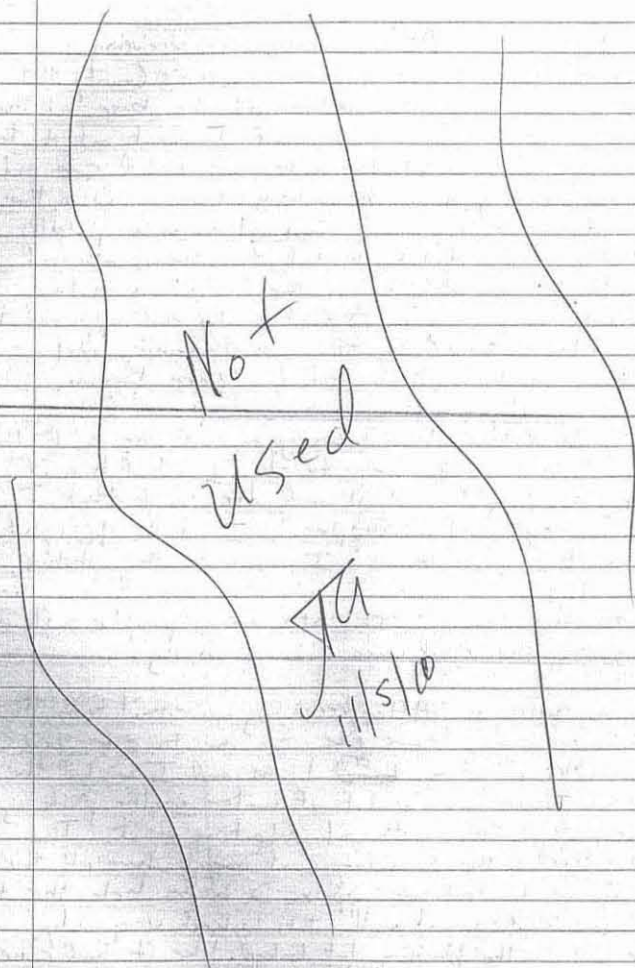
Terry A.
8/9/10



Nov. 4, 2010 - At 2:00 PM, after receiving a phone call from Jennifer Wheeler, Harris County that some oil was in the bar ditch at the base of the driveway at USOR, Lam and I went out to the site. Upon arriving at the site we could see oil stains leading from the parking lot area, down the front drive way, and then oil on water puddles in the bar ditch located to the north and south of the driveway. The oil stains in the ditch only went ~ 30 feet north and appeared to be blown there by strong north wind. Oil stains in bar ditch led to Vince Begon. There was a guy sitting in his pickup and fishing. I asked him how it was going and he said that he had caught one catfish. I asked him if he was going to eat it and he said that I was looking at "Supper". I took 10 photographs of the oil release. In one of the photos, the last one, you can see the guy fishing next to his truck. The other two people walking across the road were also fishing.

Nov. 5, 2010 - After receiving an email from the Receiver saying it was OK for me to enter USOR and MCC Recycling, ~~then~~ Lam and I visited the sites. There was a lot of water in the parking lot at USOR with oil floating on it. The water level in the secondary containment where all the ASTs are located was approx. 2 inches below the top of the containment wall. It looked very oily. The oil in the parking lot looked like it had come from the bag area next to the acid tank.

TJ A 11/5/10



Nov. 5, 2010 - We also saw that the bioreactor was leaking from several small holes and the tank from secondary containment was also leaking from several holes in the north wall. All of these leaks were going onto the ground. We then looked at MCC Regeling. We did not see any releases although the liquid level in the Chlorine Contact Chamber was very near the hole at the northwest corner of the structure. We left the site at 10:15. I took 71 photographs.

JTA 11/5/10

January 28, 2011 - After receiving a call from Adam Adams, who said that he had received a call from Harris County who said that releases may be occurring at the USOR, Olga Salinas and I visited the site. As usual, the site is abandoned and locked up. The grass looks like it was recently mowed. The parking lot impoundment is full. We didn't see any sheens or oil on this liquid. The Spentwater Pond is full and we saw it discharge to the ditch located along the west side of the warehouse. We measured ~ 8-9 inches of freeboard in the treatment area secondary containment and 5-6 inches of freeboard in the tank farm sec. containment. Bay area 34.35 and 36 are pretty full and have about 3-4 inches of freeboard. JTA 1/28/11

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around 10:00 AM
Jan 4, 2011, Olga Salinas and I made a site visit to USOR and MCC Recycling. There had been a big rain that occurred last week and I wanted to see how the site looked. The USOR facility was abandoned, nobody there, and the fence and gates look good - everything is locked up. From a trash bucket located near the office building, it looks like the site got a major rainfall last week - I measured 7 inches of water in the bucket. There was approx. 7-8 inches of water in the sec. containment areas. The parking lot area was completely full. No oil sheens or oil on the parking lot water. Bay area 34-35, was about 1/2 full of water. It has a 2 feet of freeboard. We then left the site - released the gate. The MCC facility was also locked up. We walked to the Chlorine Contact chamber. The liquid level was above the hole and black colored liquid was discharging from cracks in the concrete road next to the NW corner of the chlorine contact chamber. The liquid was running across the road into the northwest part of the site, where there is soil and vegetation. I called Adam Adams, EPA and told him the situation. We checked the rest of the site. Didn't see any other releases - we left the site - locked the gate at 11:45 AM.

John Adams
1/4/11

PHOTOGRAPHS TAKEN ON JULY 2, 2010, TZA



tceq070210-02



tceq070210-04



tceq070210-01



tceq070210-03

PHOTOGRAPHS TAKEN ON JULY 2, 2010, Tja



tceq070210-06



tceq070210-08



tceq070210-05



tceq070210-07

PHOTOGRAPHS TAKEN ON JULY 2, 2010, *Tyler*



tceq070210-10



tceq070210-12



tceq070210-09



tceq070210-11

PHOTOGRAPHS TAKEN ON JULY 2, 2010, Tyle



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tceq 070210-14



tceq 070210-13



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PHOTOGRAPHS TAKEN ON JULY 2, 2010, Tya



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PHOTOGRAPHS TAKEN ON JULY 2, 2010, *Ty A*



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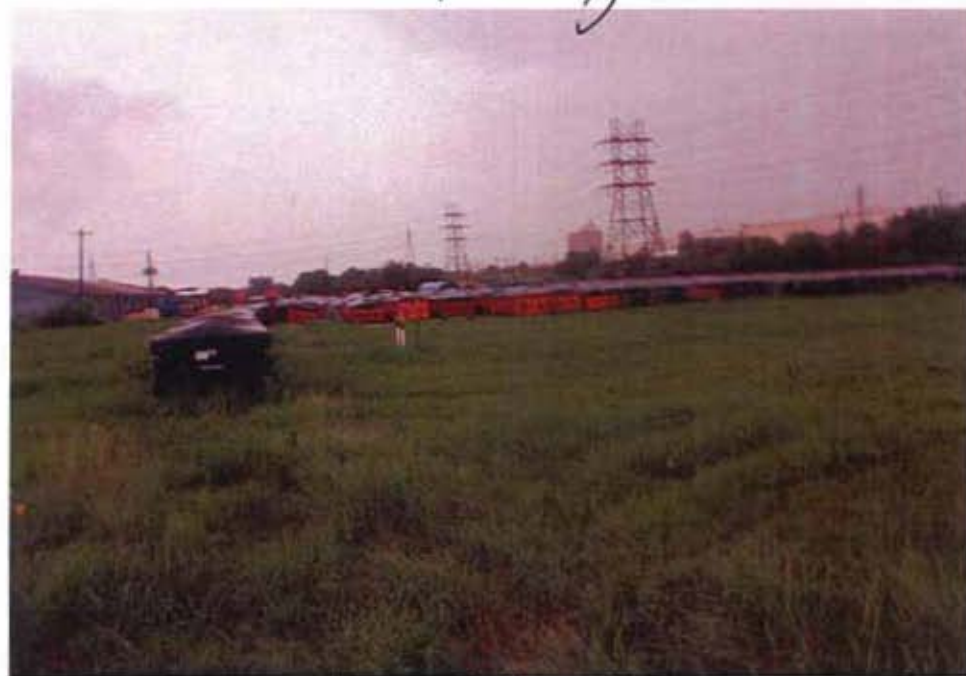


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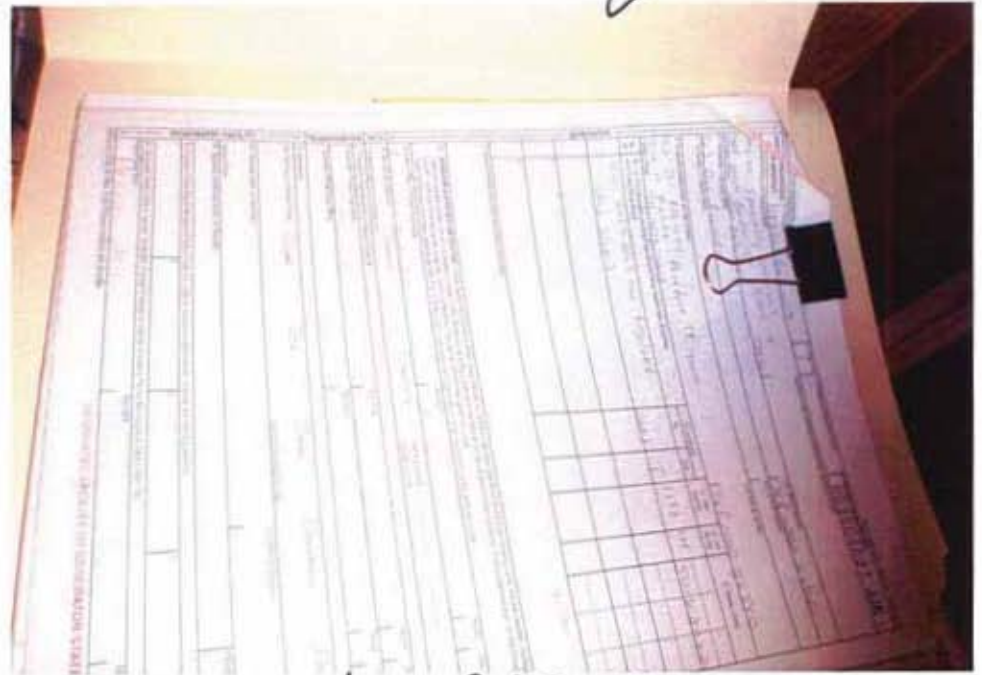


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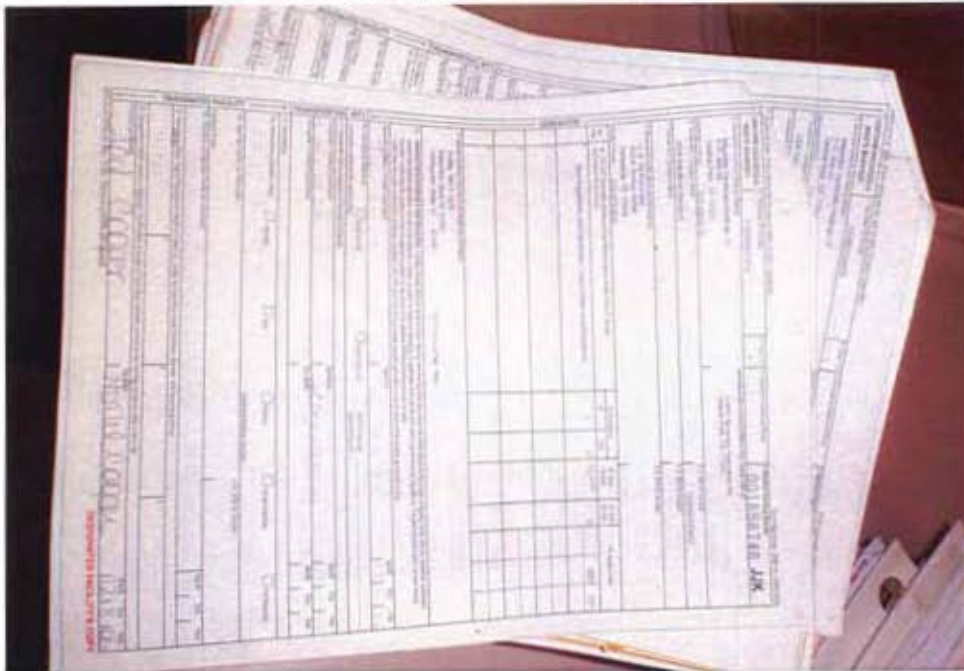
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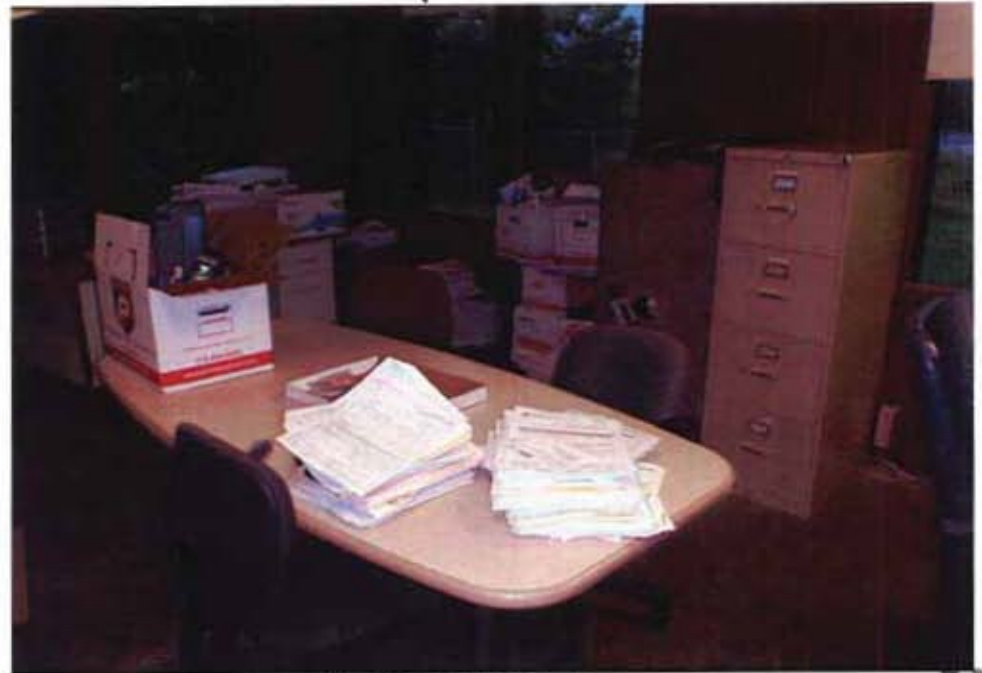
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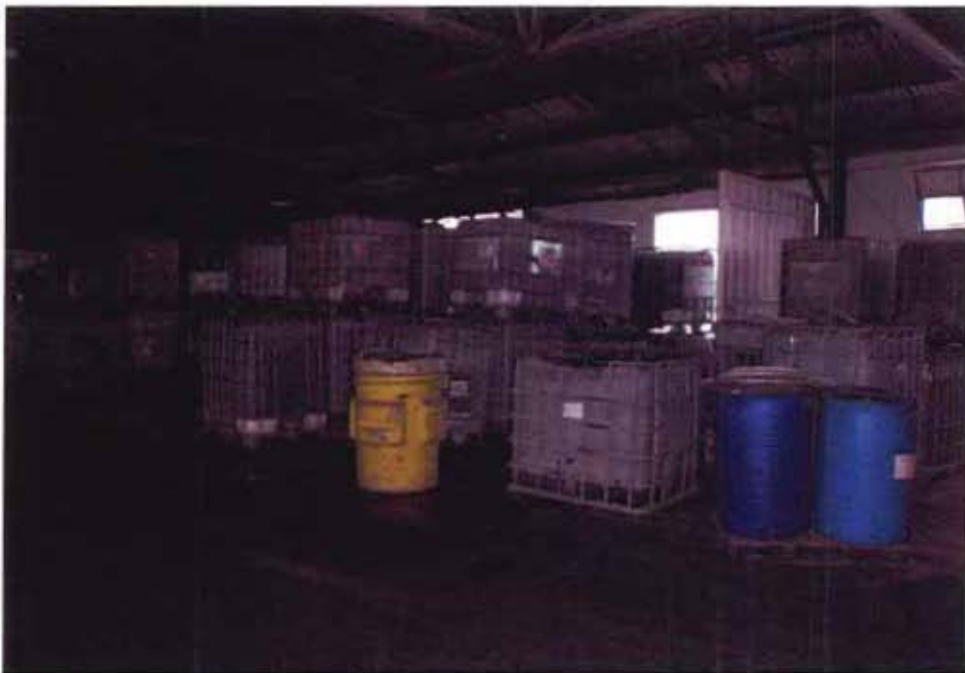


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PHOTOGRAPHS TAKEN ON JULY 2, 2010, Tyla



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tceq070210-35

PHOTOGRAPHS TAKEN ON JULY 3, 2010, TJC



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PHOTOGRAPHS TAKEN ON JULY 3, 2010, TjL



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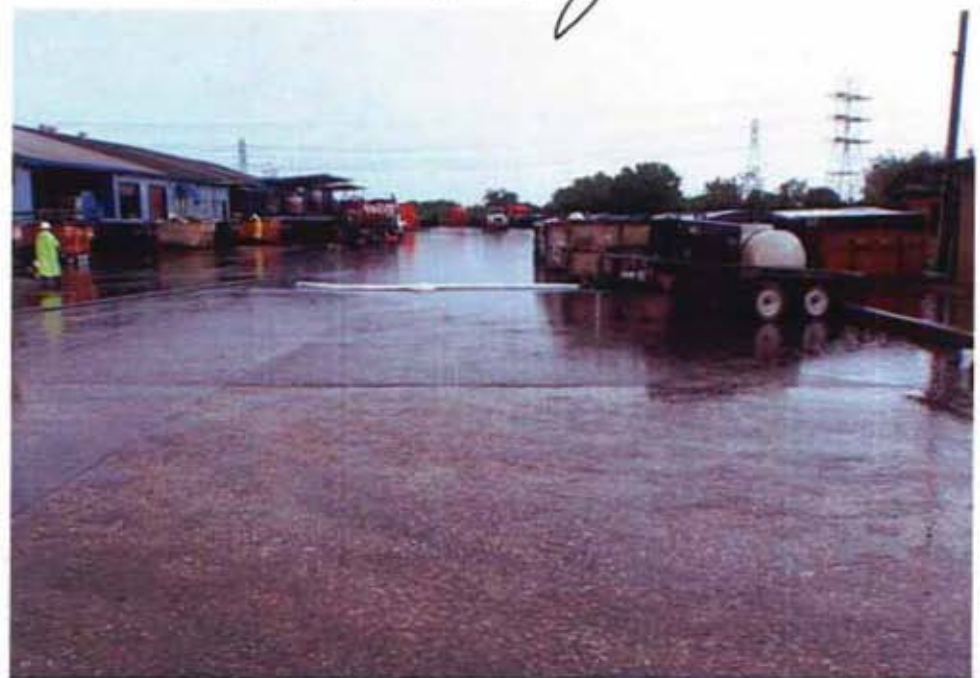


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PHOTOGRAPHS TAKEN ON JULY 3, 2010, Tyla



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PHOTOGRAPHS TAKEN ON JULY 3, 2010, TJC



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PHOTOGRAPHS TAKEN ON JULY 3, 2010, TJA



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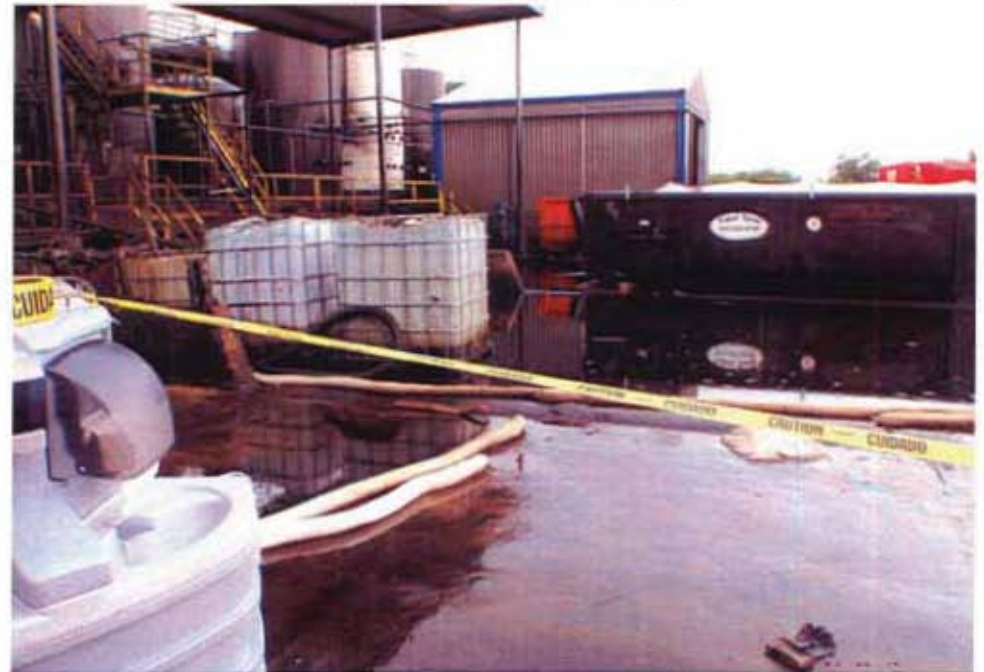
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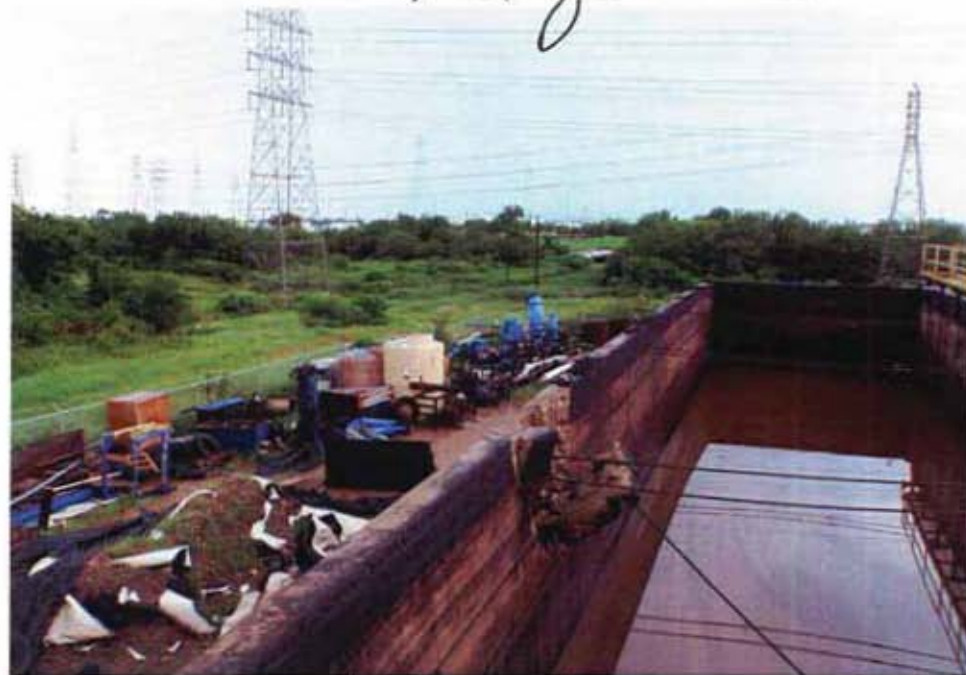


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PHOTOGRAPHS TAKEN ON JULY 3, 2010, TJC



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PHOTOGRAPHS TAKEN ON JULY 3 2010, TJC



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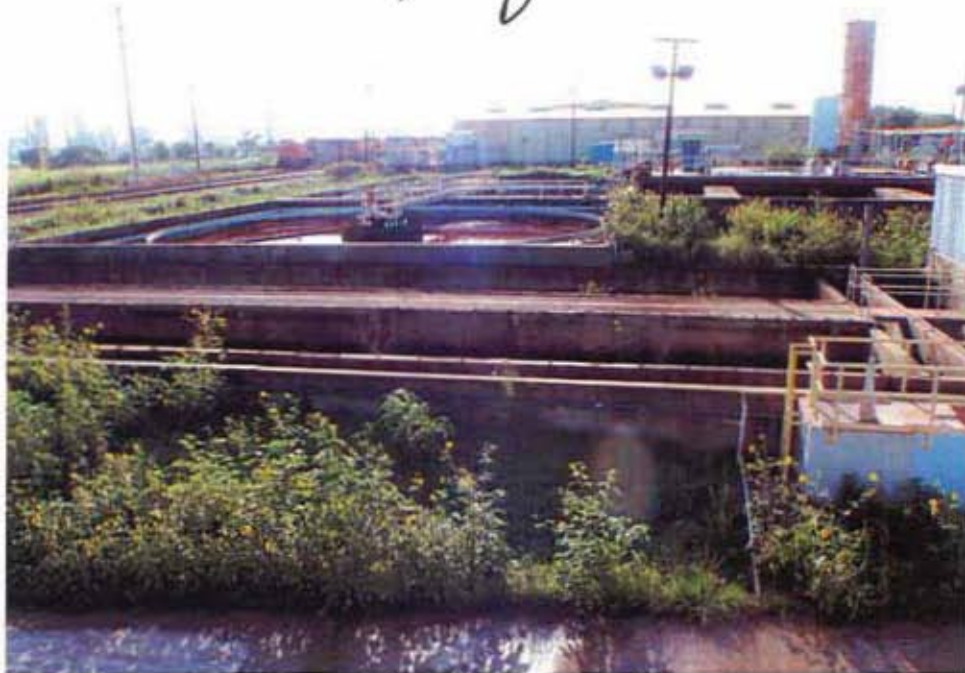


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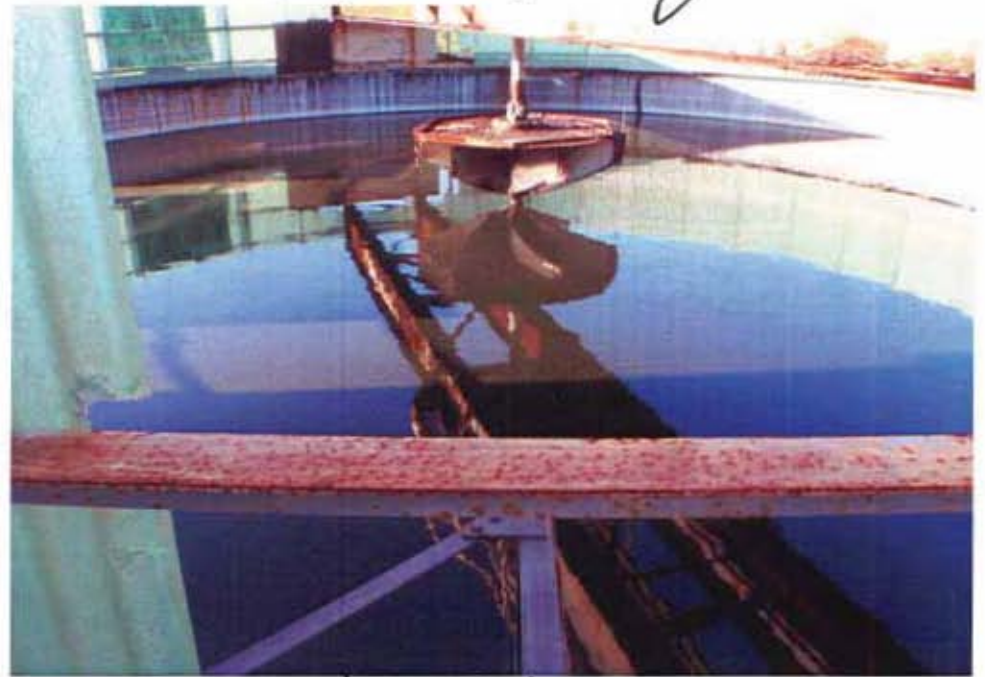


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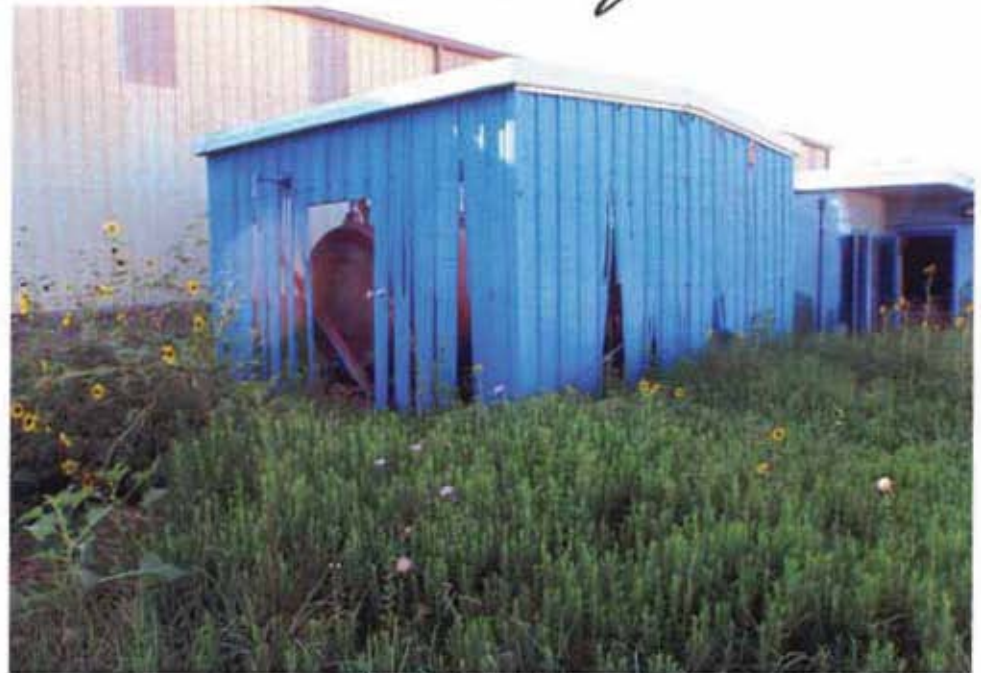


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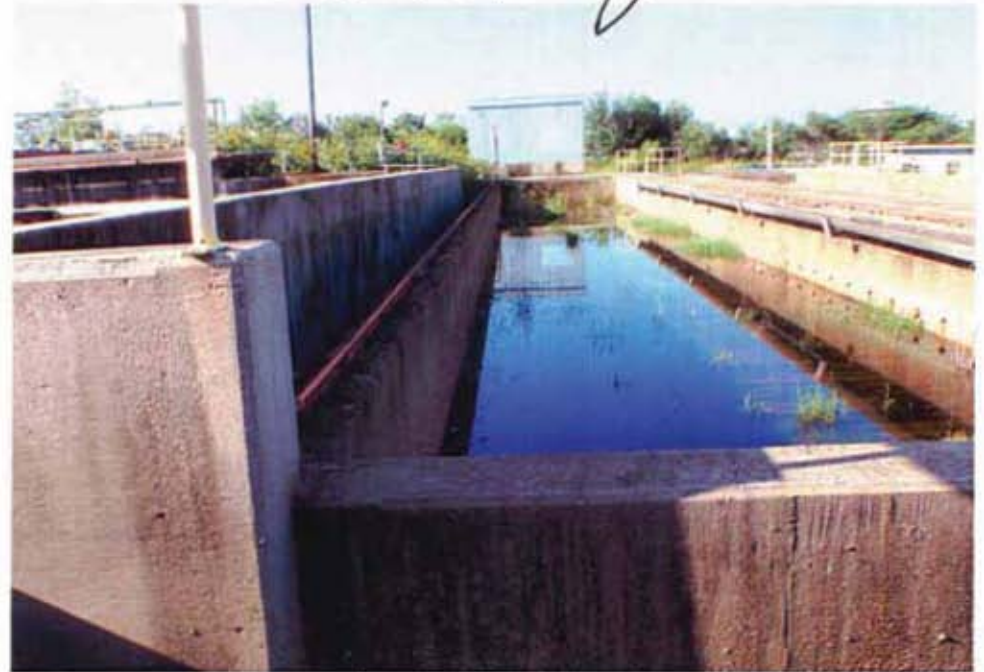


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PHOTOGRAPHS TAKEN ON JULY 4, 2010, Tyla



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PHOTOGRAPHS TAKEN ON JULY 4, 2010, Tja



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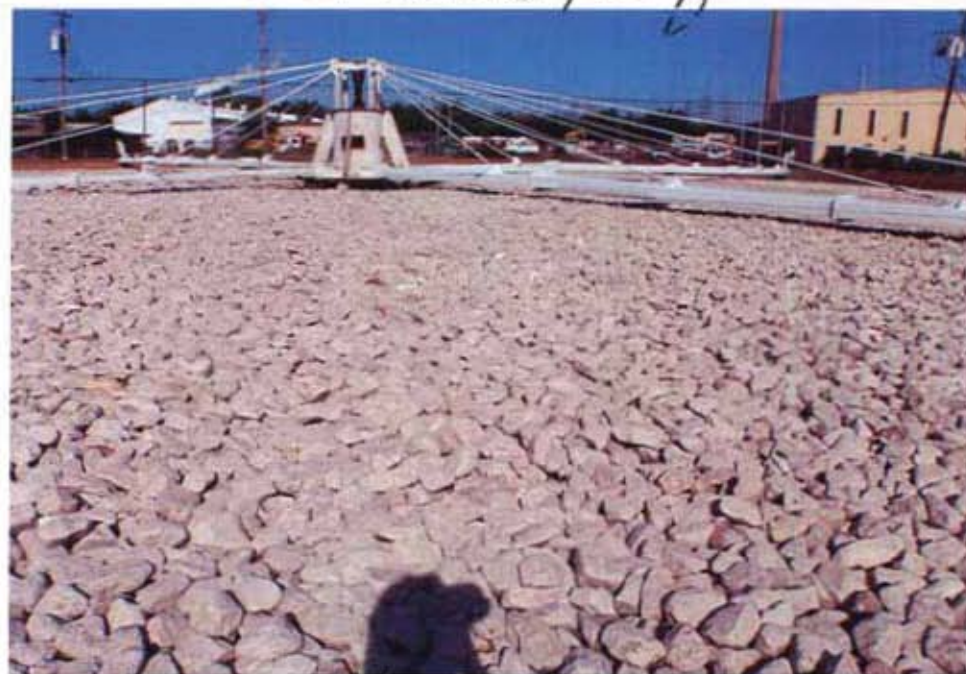


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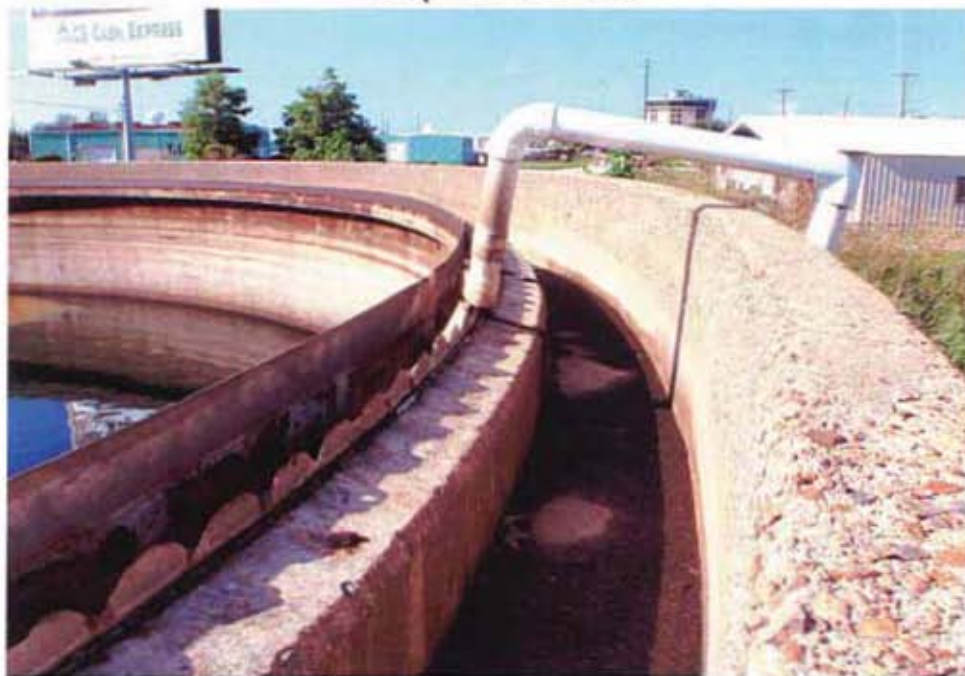
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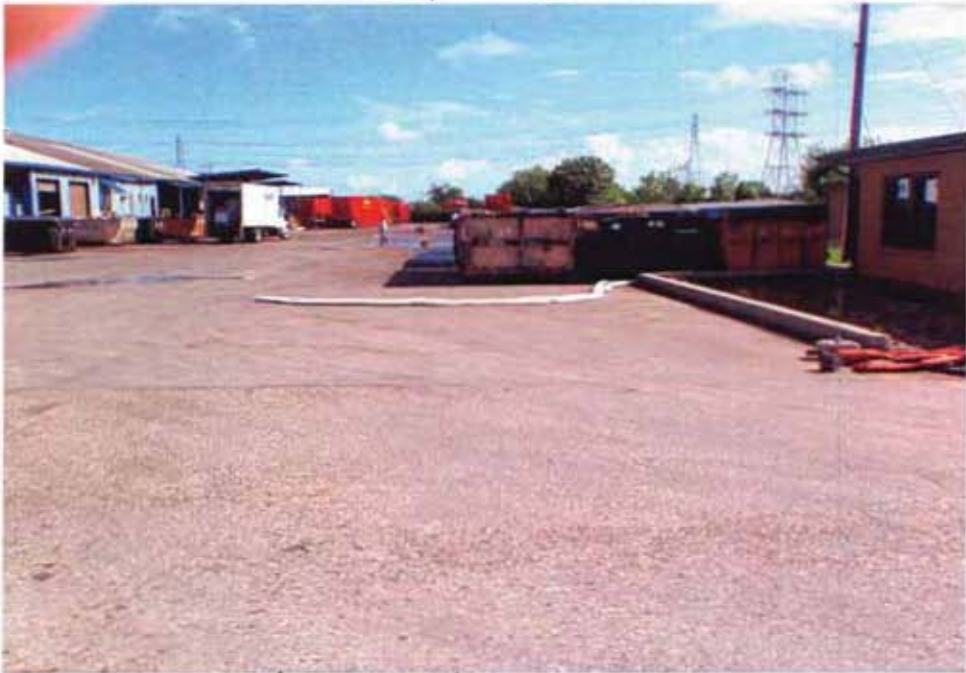
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PHOTOGRAPHS TAKEN ON JULY 5, 2010

TJA



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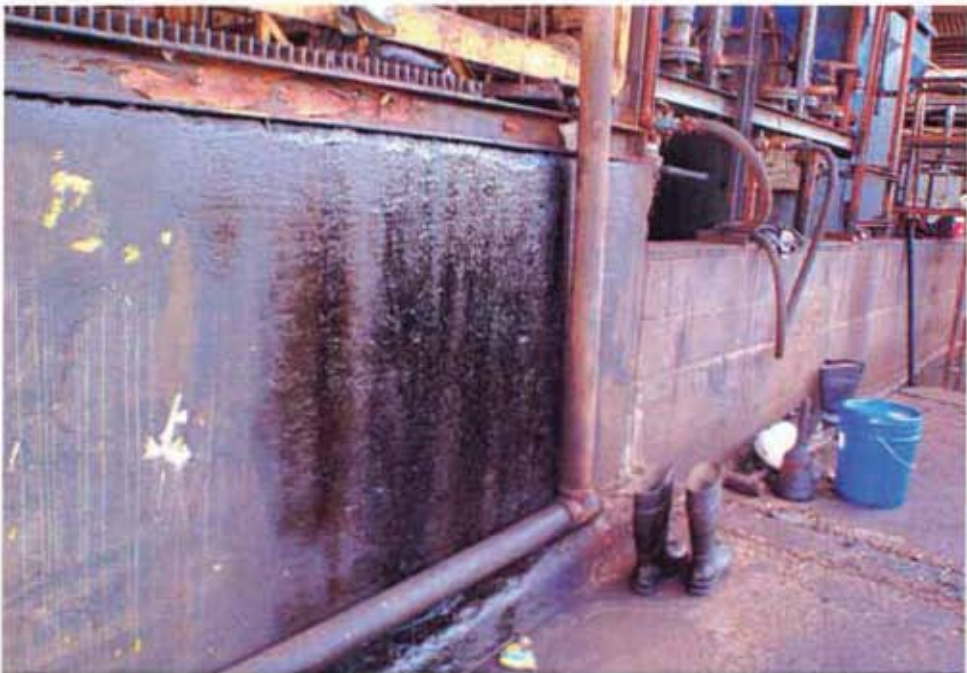
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PHOTOGRAPHS TAKEN ON JULY 6, 2010, Ty C



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PHOTOGRAPHS TAKEN ON JULY 6, 2010, TjL



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PHOTOGRAPHS TAKEN ON JULY 7, 2010, Tja



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PHOTOGRAPHS TAKEN ON JULY 7, 2010, Tya



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PHOTOGRAPHS TAKEN ON JULY 7, 2010, TJC



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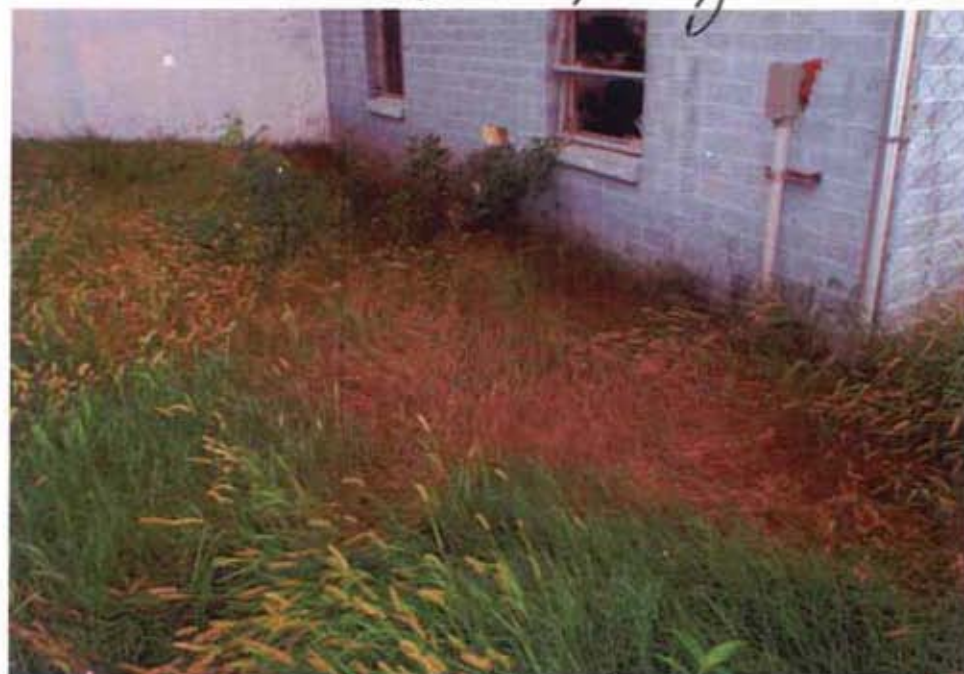


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PHOTOGRAPHS TAKEN ON JULY 7, 2010, Tja



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PHOTOGRAPHS TAKEN ON JULY 8, 2010, TJL



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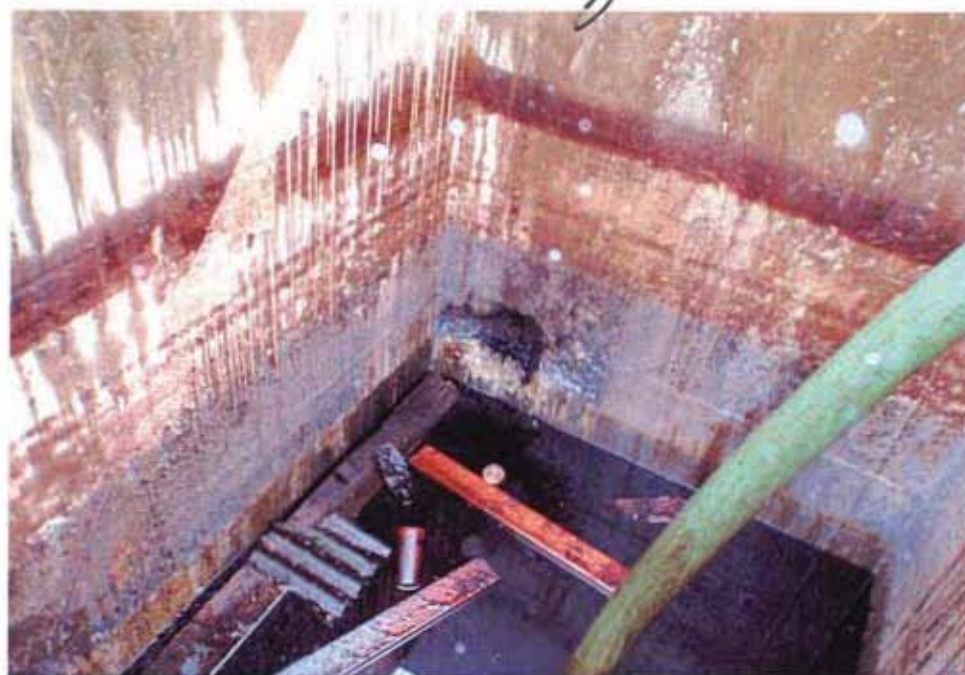


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PHOTOGRAPHS TAKEN ON JULY 8, 2010, TJC



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PHOTOGRAPHS TAKEN ON JULY 8, 2010, Tyc



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PHOTOGRAPHS TAKEN ON JULY 8, 2010

Ty A



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PHOTOGRAPHS TAKEN ON JULY 9, 2010, TjL



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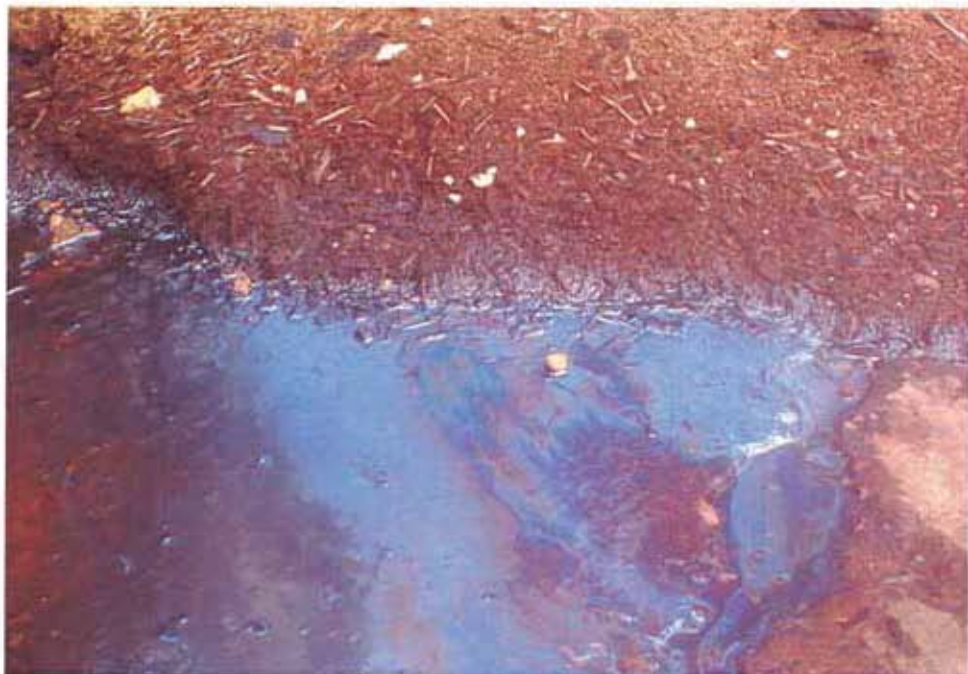


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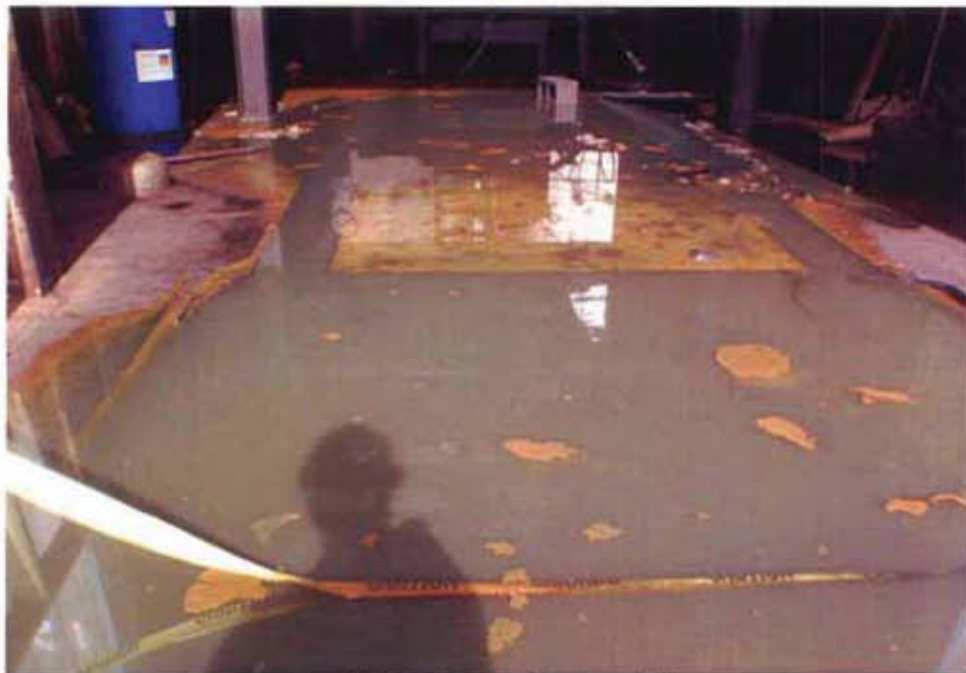


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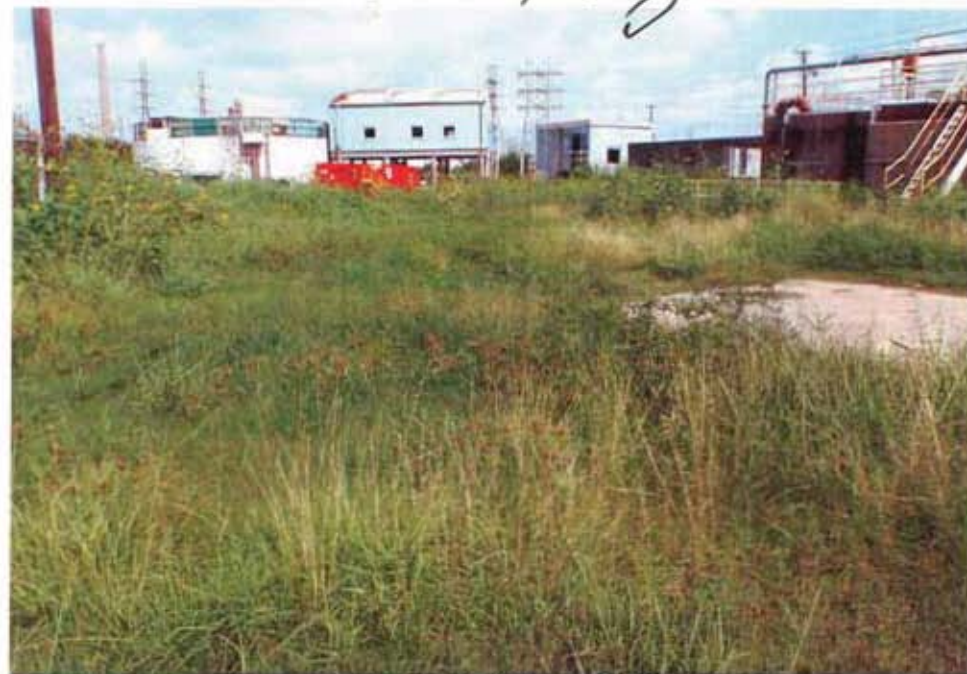


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PHOTOGRAPHS TAKEN ON JULY 9, 2010, Tyle



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PHOTOGRAPHS TAKEN ON JULY 9, 2010, Tya



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PHOTOGRAPHS TAKEN ON JULY 9, 2010, TGL



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PHOTOGRAPHS TAKEN ON JULY 9, 2010

TJC



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PHOTOGRAPHS TAKEN ON JULY 10, 2010, Tyl



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PHOTOGRAPHS TAKEN ON JULY 10, 2010, *Tyler*



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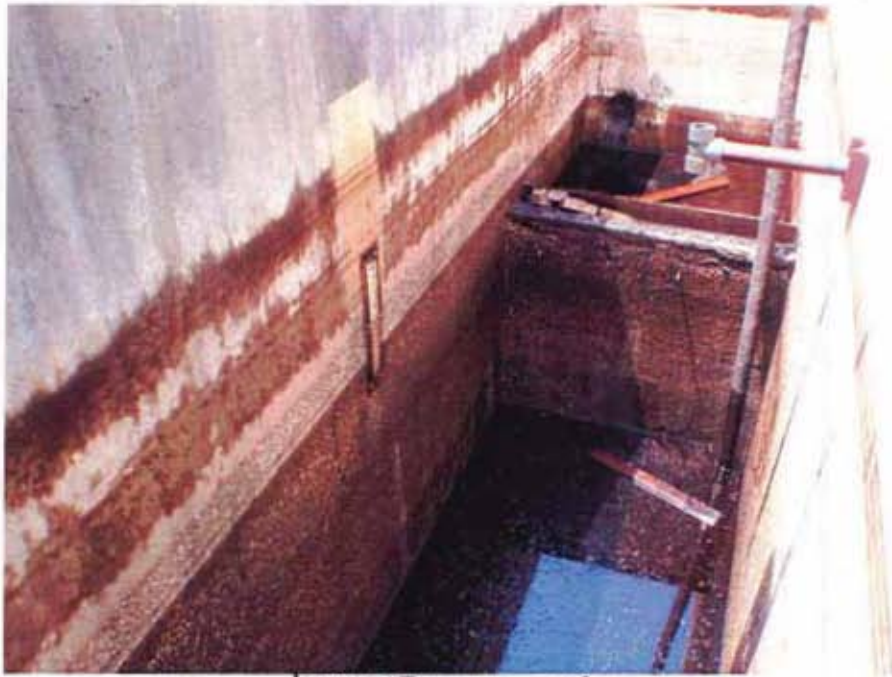


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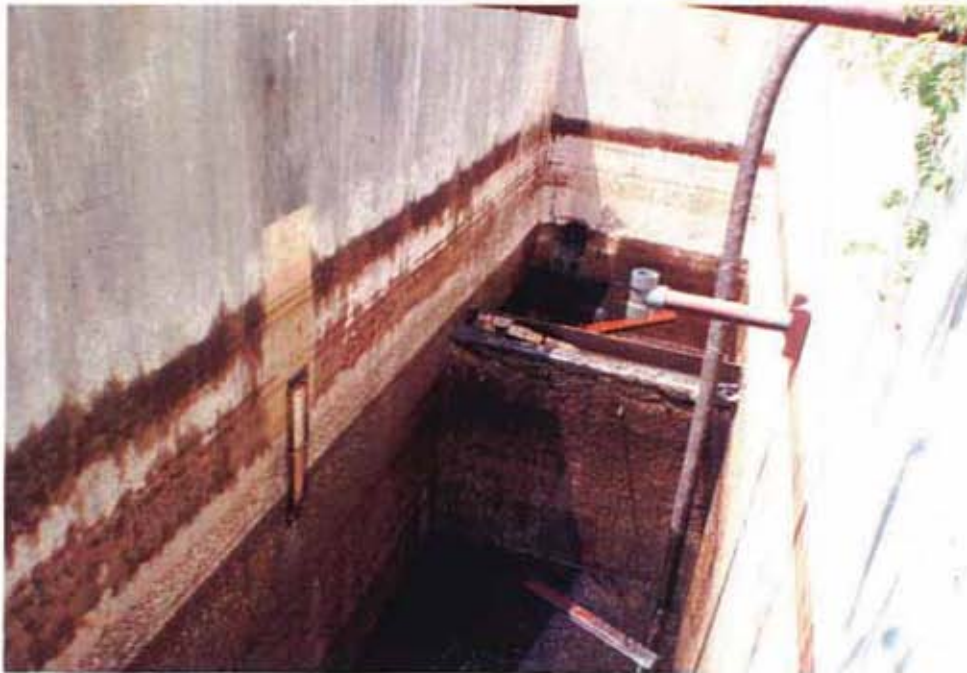
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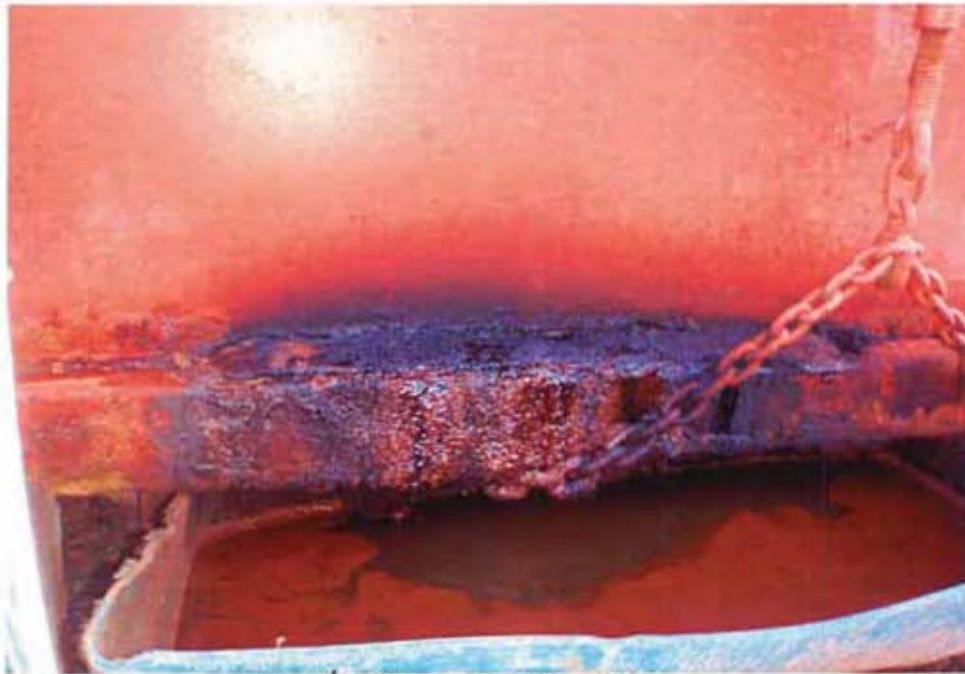


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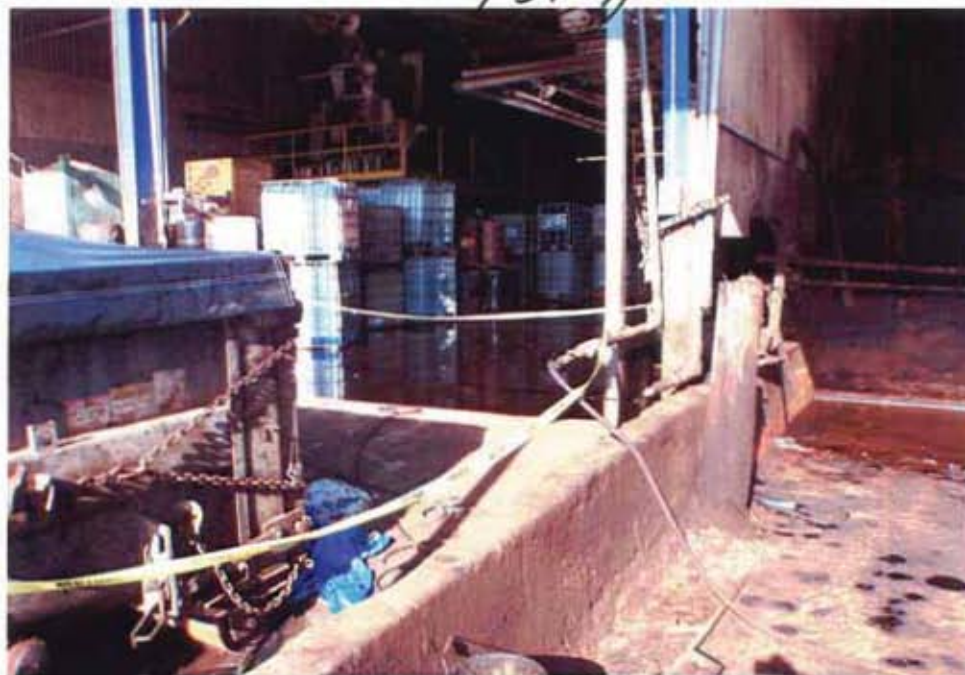


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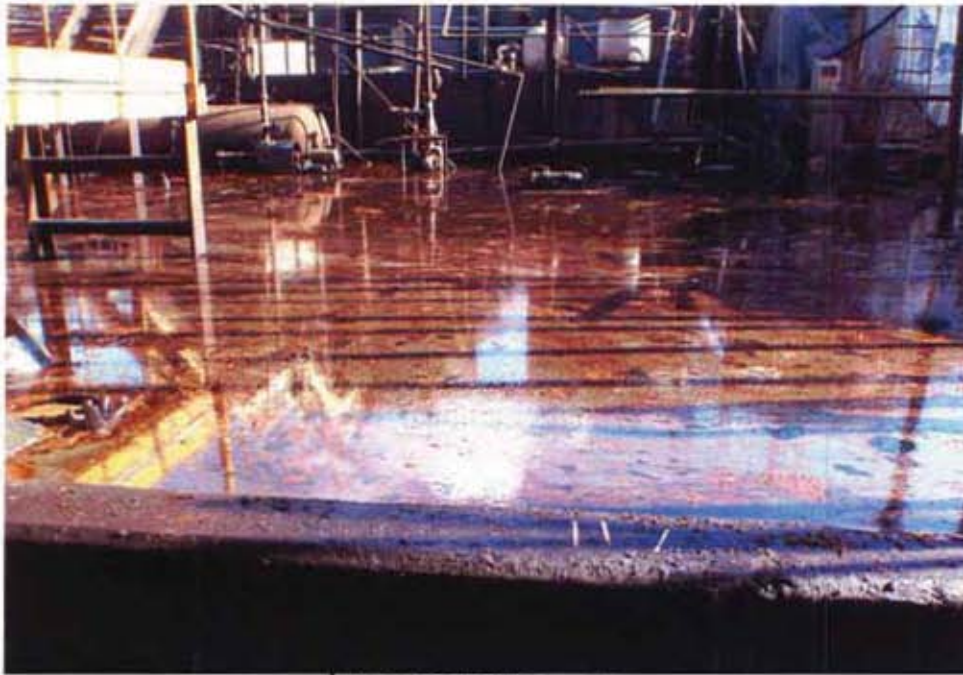


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PHOTOGRAPHS TAKEN ON JULY 12, 2010, Tylan



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PHOTOGRAPHS TAKEN ON JULY 12, 2010, *Tyler*



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PHOTOGRAPHS TAKEN ON JULY 12, 2010, TJA



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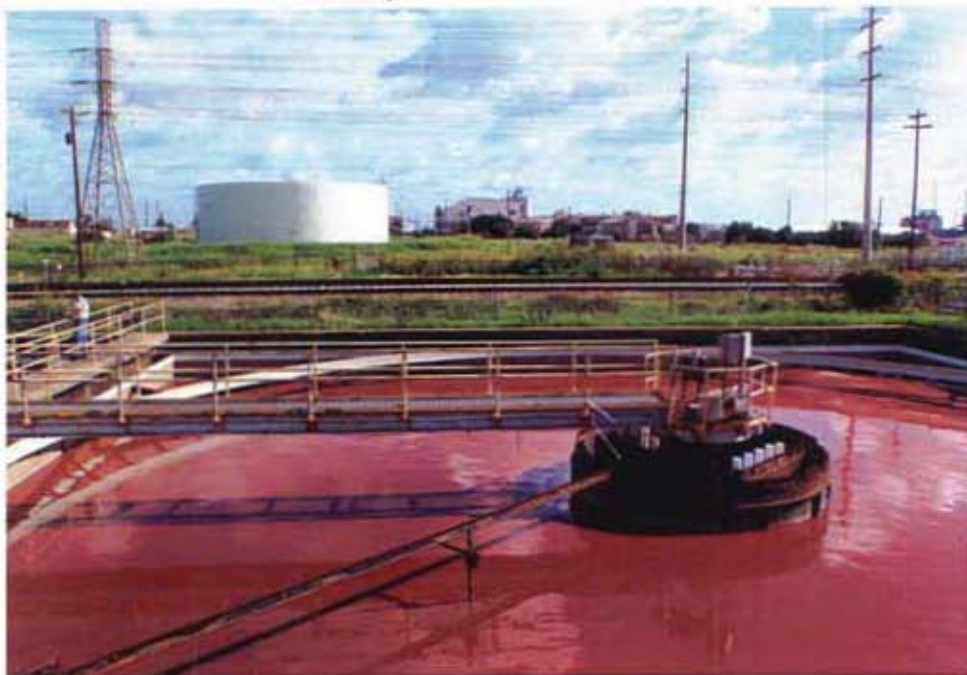
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PHOTOGRAPHS TAKEN ON JULY 13, 2010, Tyla



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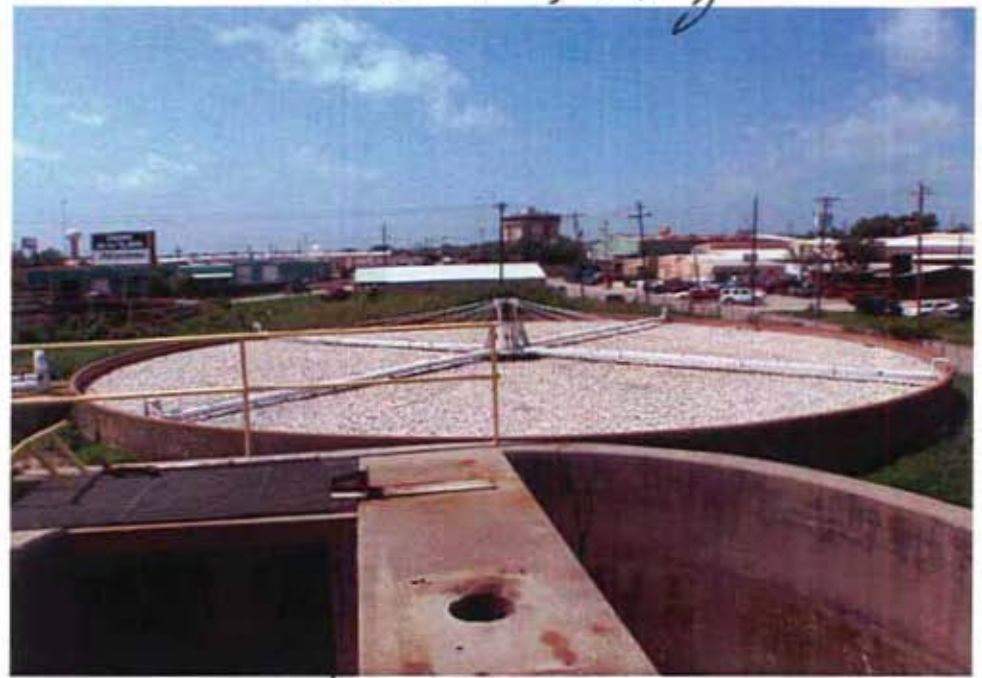


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PHOTOGRAPHS TAKEN ON JULY 13, 2010, Tyla



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PHOTOGRAPHS TAKEN ON JULY 13, 2010

Ty A



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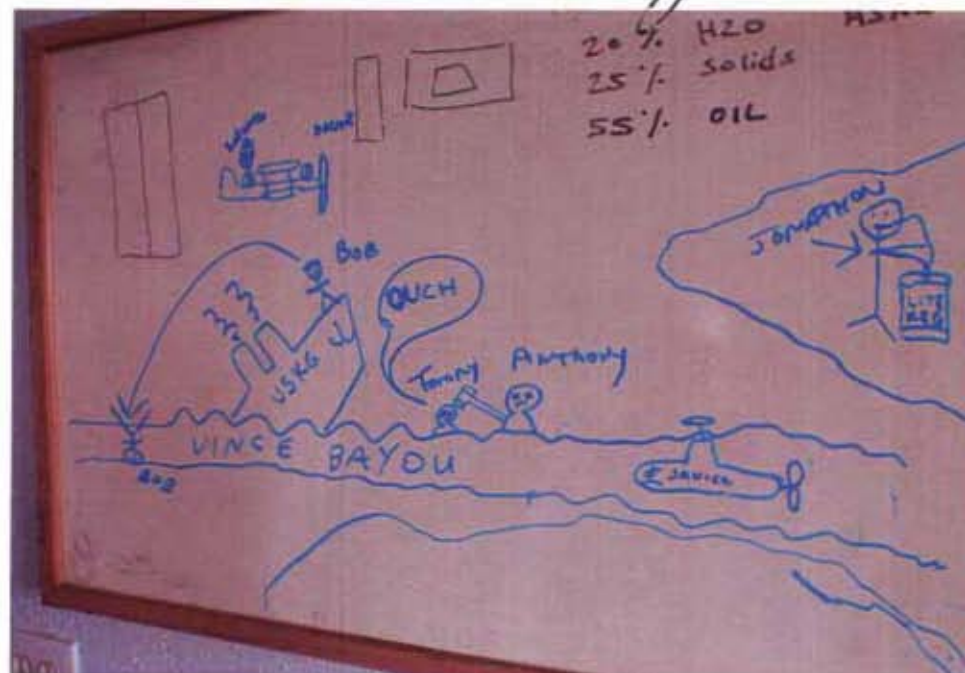


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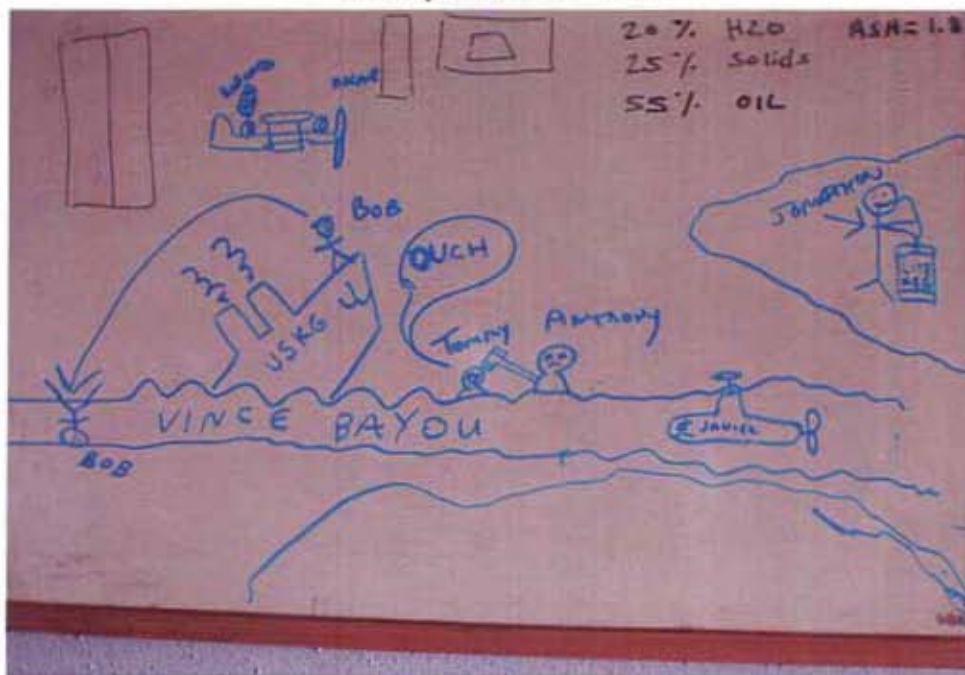
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PHOTOGRAPHS TAKEN ON JULY 14, 2010,

Tja



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PHOTOGRAPHS TAKEN ON JULY 16, 2010, Tj



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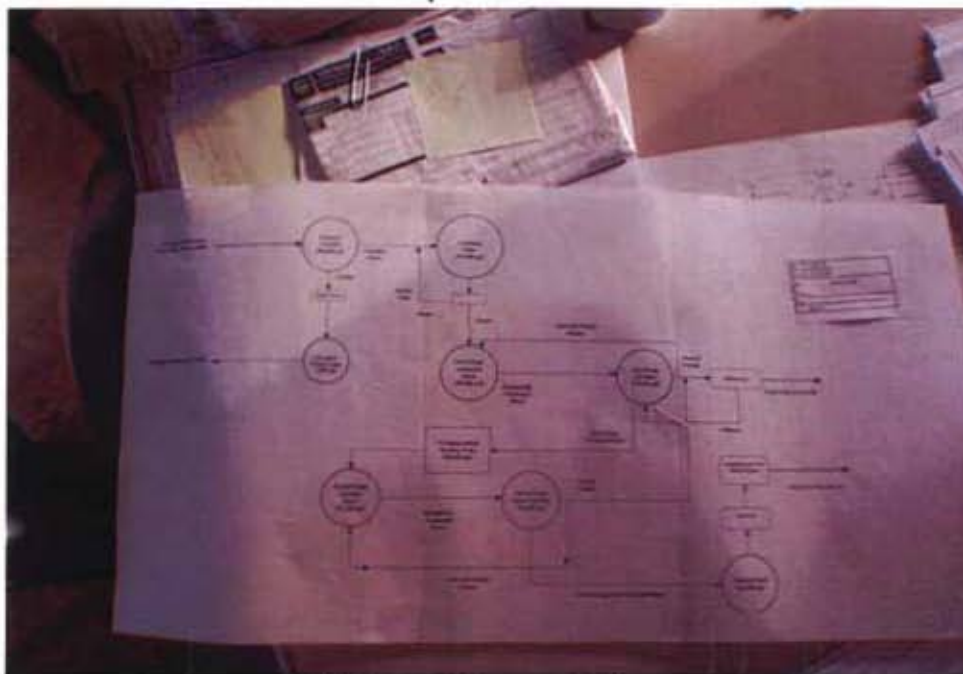
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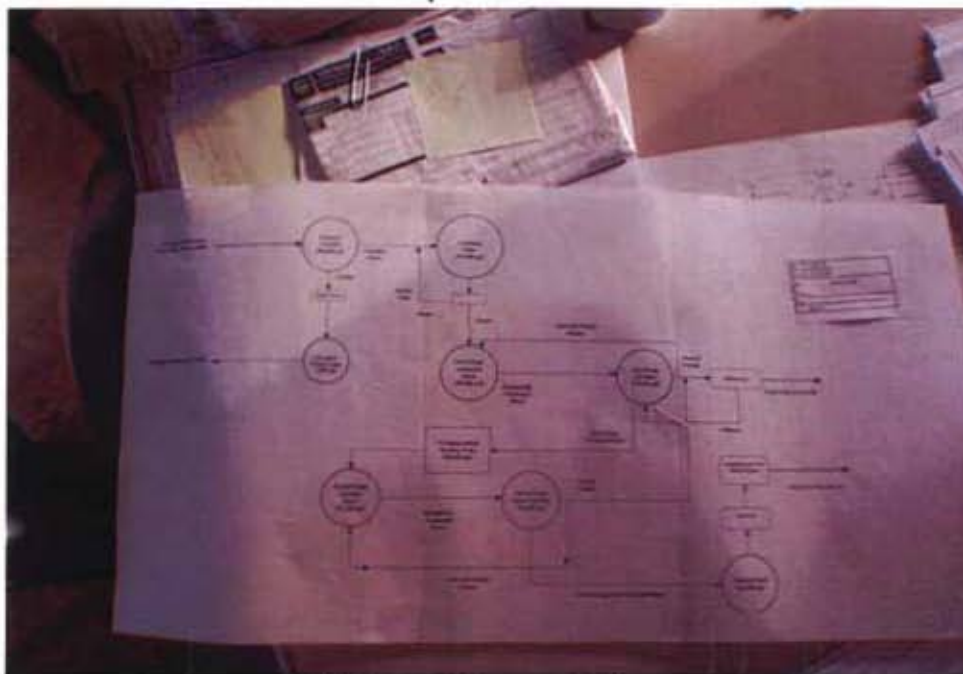
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tceq071610-08



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tceq071610-12



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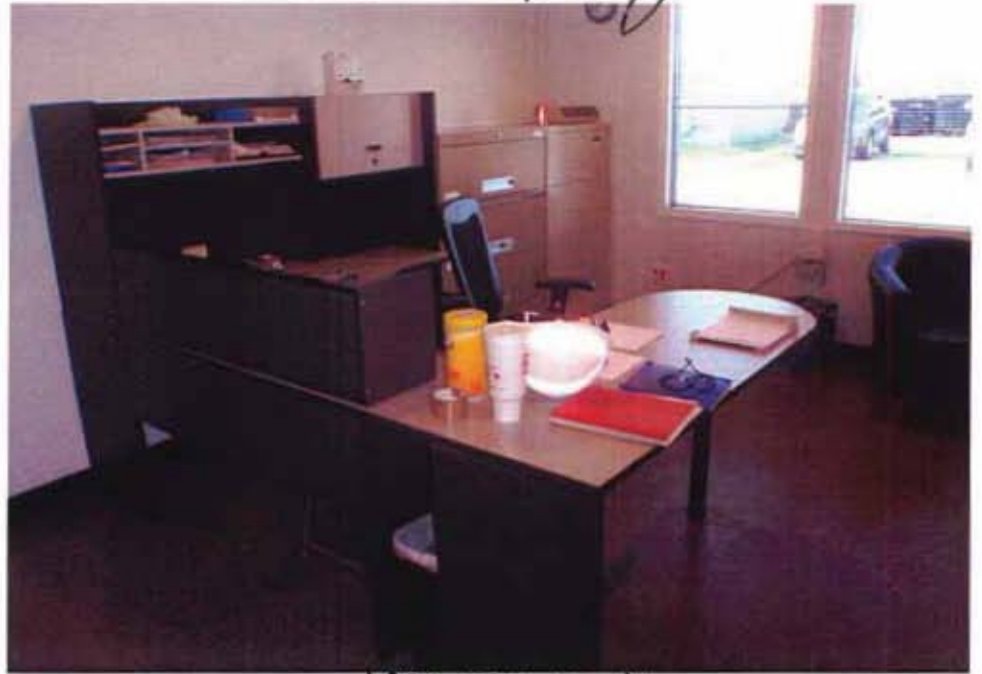


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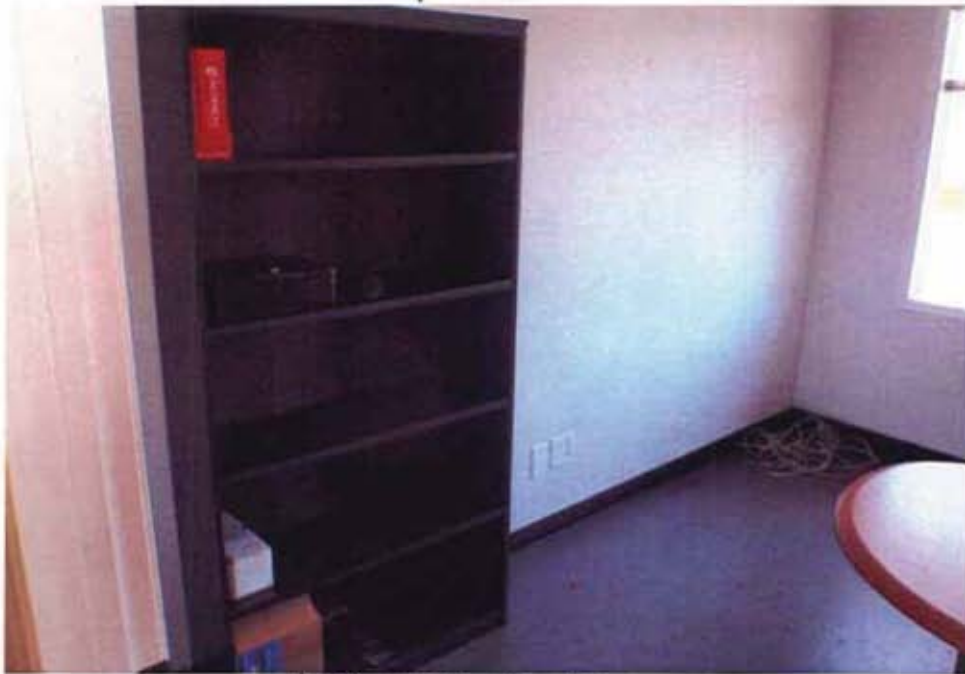
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tceq 071610-16



tceq 071610-13



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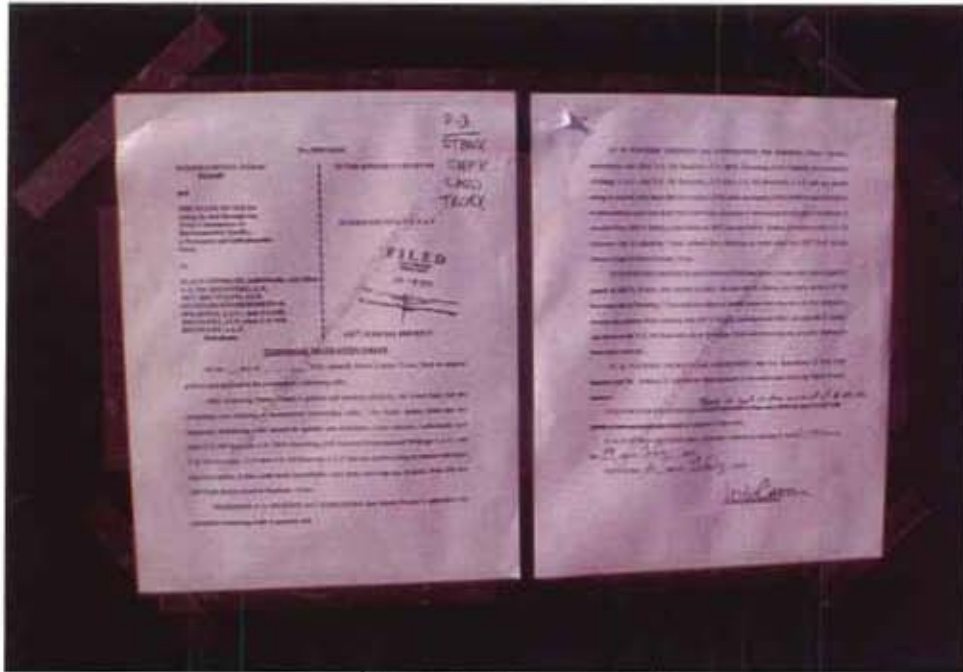


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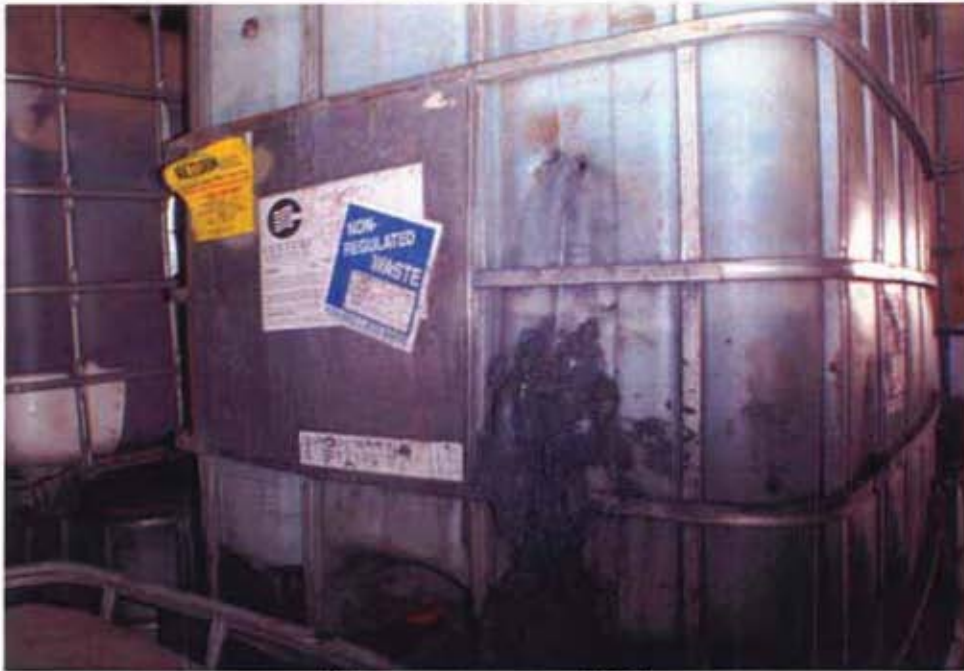
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PHOTOGRAPHS TAKEN ON JULY 16, 2010, Tj



tceq 071610-30



tceq 071610-32



tceq 071610-29



tceq 071610-31

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tceq 071610-33

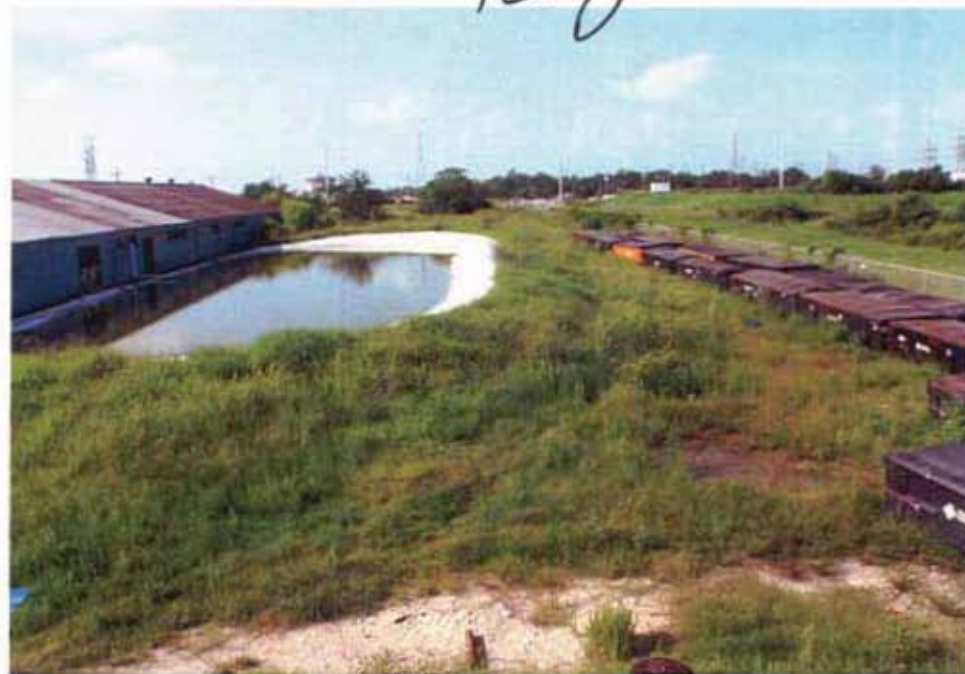


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tceq071610-39

PHOTO GRAPHS TAKEN ON JULY 16, 2010, Tj



tceq071610-42



tceq071610-44



tceq071610-41



tceq071610-43

PHOTOGRAPHS TAKEN ON JULY 16, 2010, TJC



tceq 071610-46



tceq 071610-48



tceq 071610-45



tceq 071610-47

PHOTOGRAPHS TAKEN ON JULY 16, 2010, Tjg



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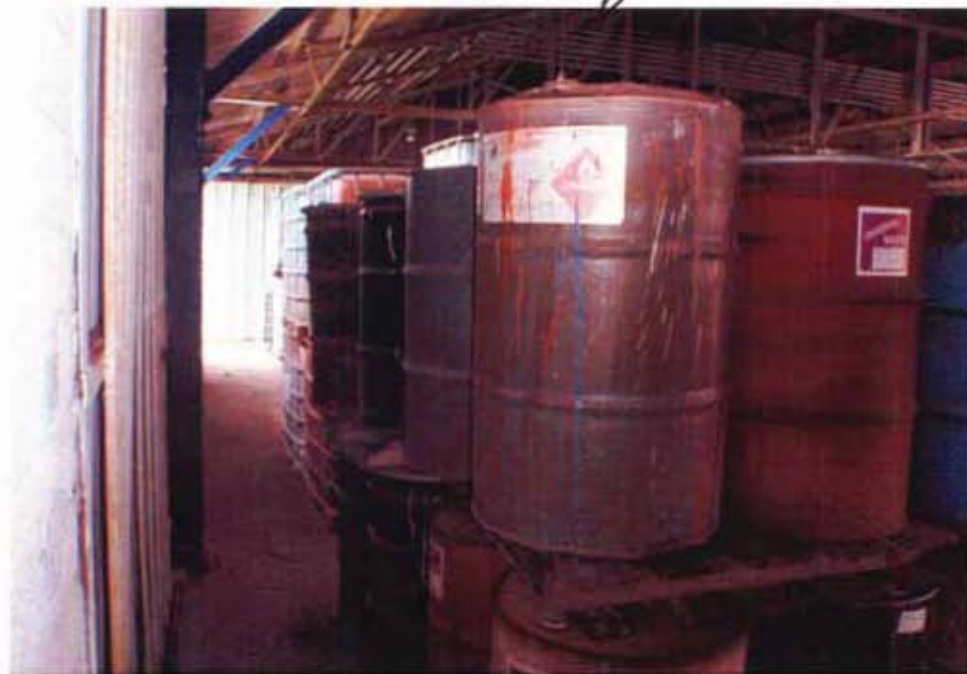


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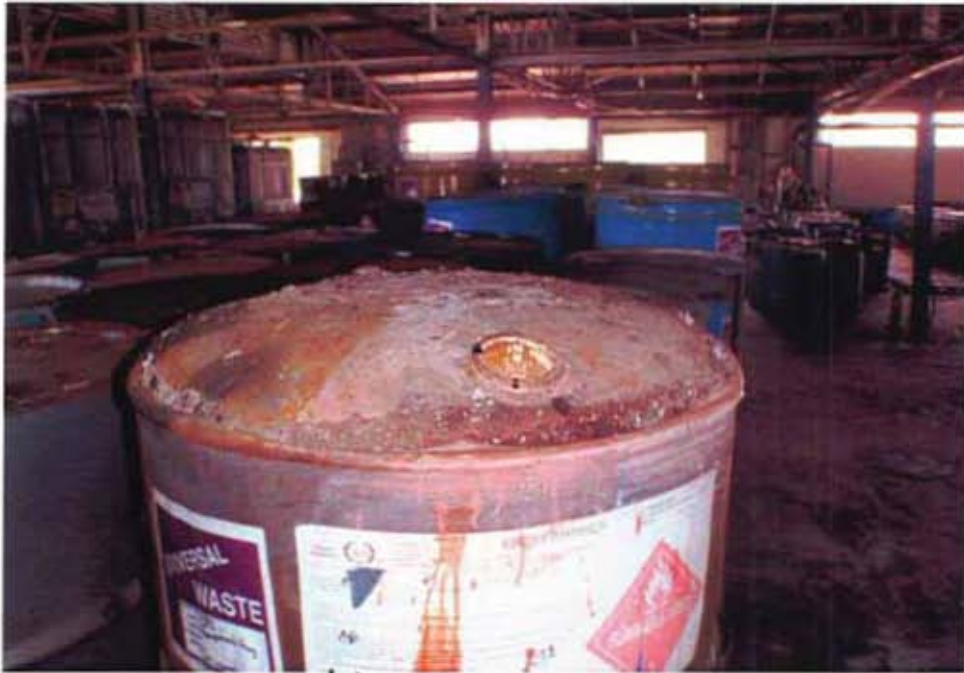


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PHOTOGRAPHS TAKEN ON JULY 16, 2010, Tyl



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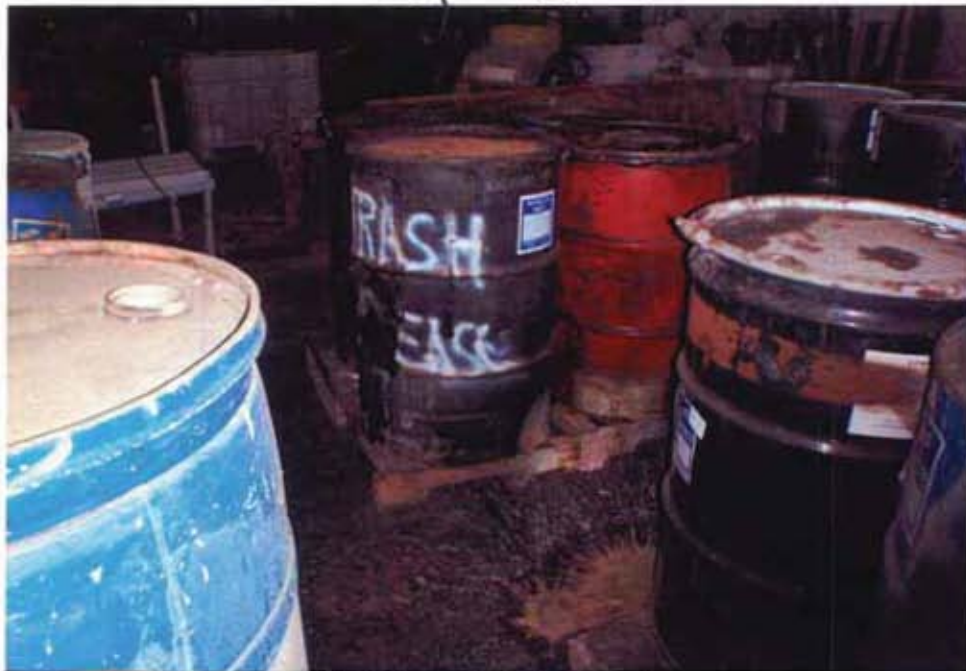
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tceq 071610-64



tceq 071610-61



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tceq071610-65

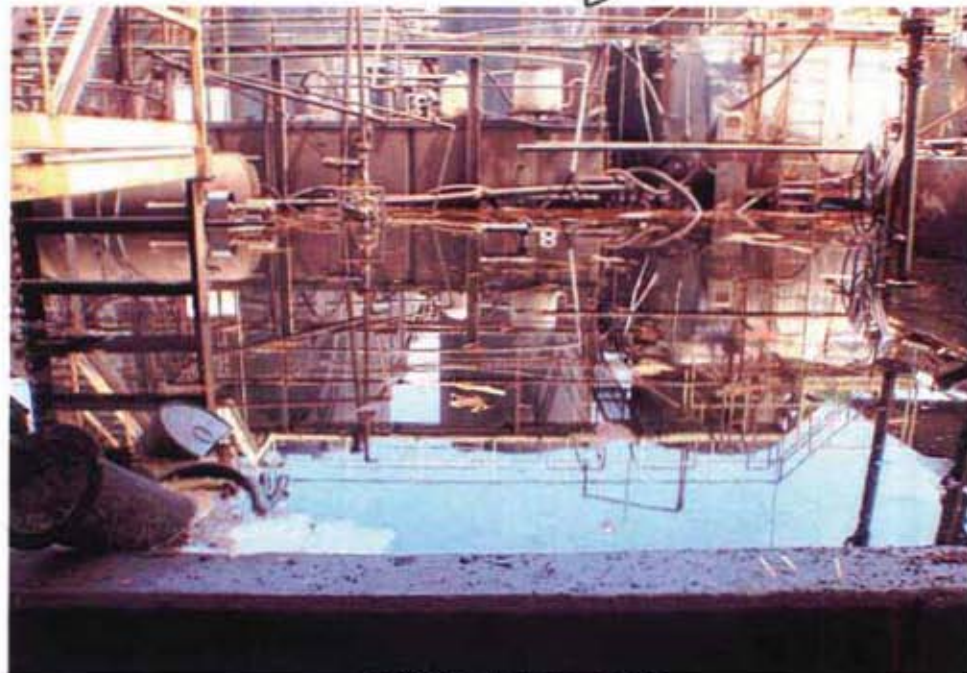


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tceq071610-70



tceq071610-72



tceq071610-69



tceq071610-71

PHOTOGRAPHS TAKEN ON JULY 16, 2010, TJC



tceq 071610-74



tceq 071610-76



tceq 071610-73



tceq 071610-75

PHOTOGRAPHS TAKEN ON JULY 16, 2010,

Ty A



tceq071610-78



tceq071610-77

PHOTOGRAPHS TAKEN ON JULY 22, 2010, Tyl



tceq072210-02



tceq072210-04



tceq072210-01



tceq072210-03

PHOTOGRAPHS TAKEN ON JULY 22, 2010, Tyl



tceq072210-06



tceq072210-08



tceq072210-05



tceq072210-07

PHOTOGRAPHS TAKEN ON JULY 22, 2010, Tj



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PHOTOGRAPHS TAKEN ON July 22, 2010, Tyla



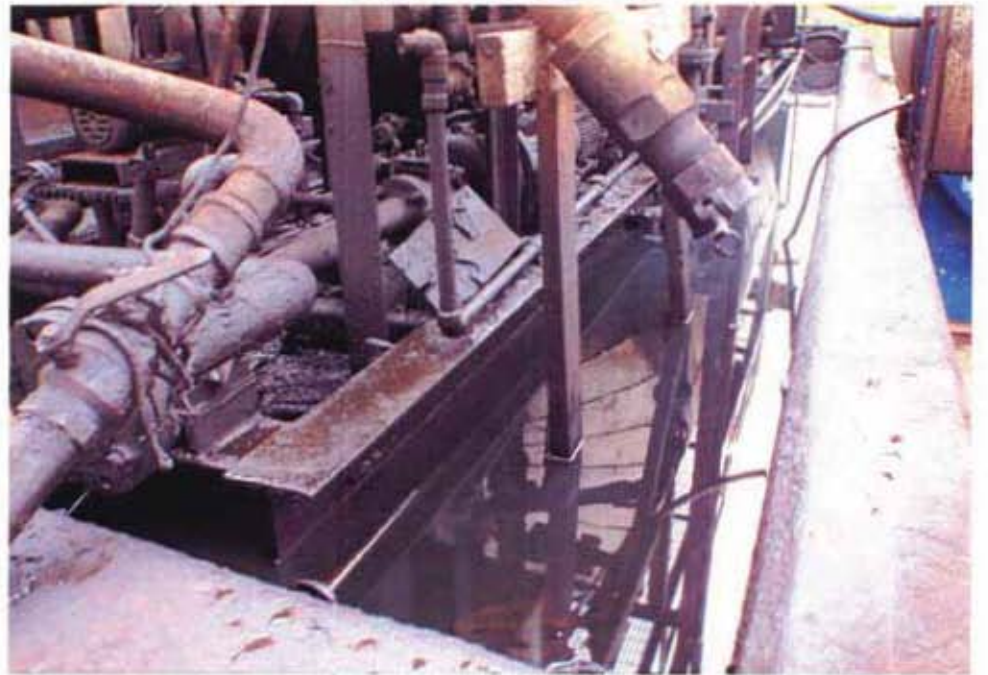
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PHOTOGRAPHS TAKEN ON JULY 22, 2010, Tja



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PHOTOGRAPHS TAKEN ON JULY 22, 2010, Tjg



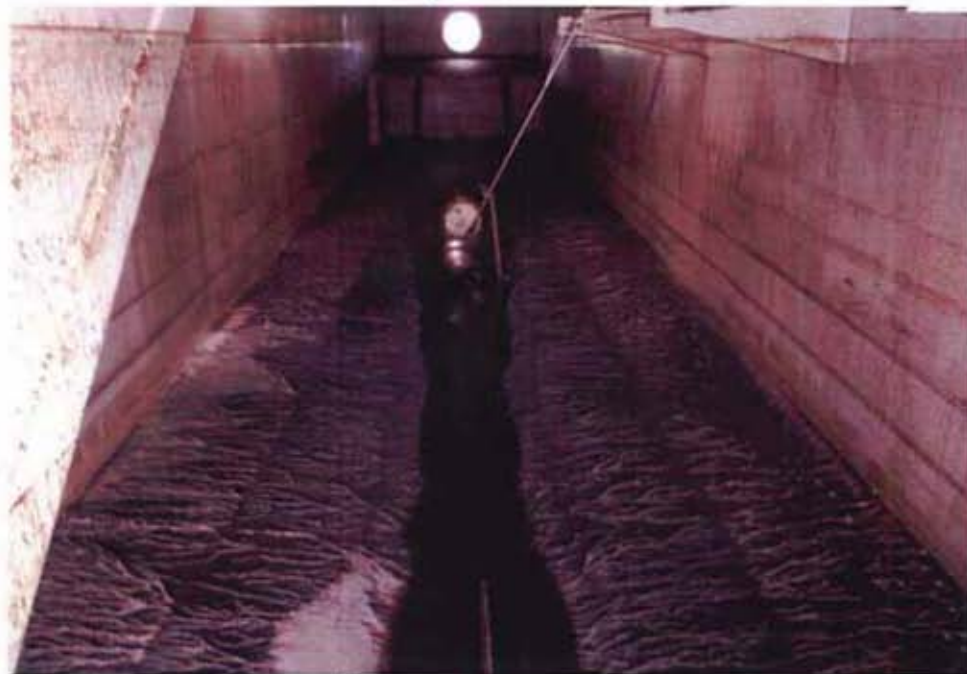
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tceq 072210-28

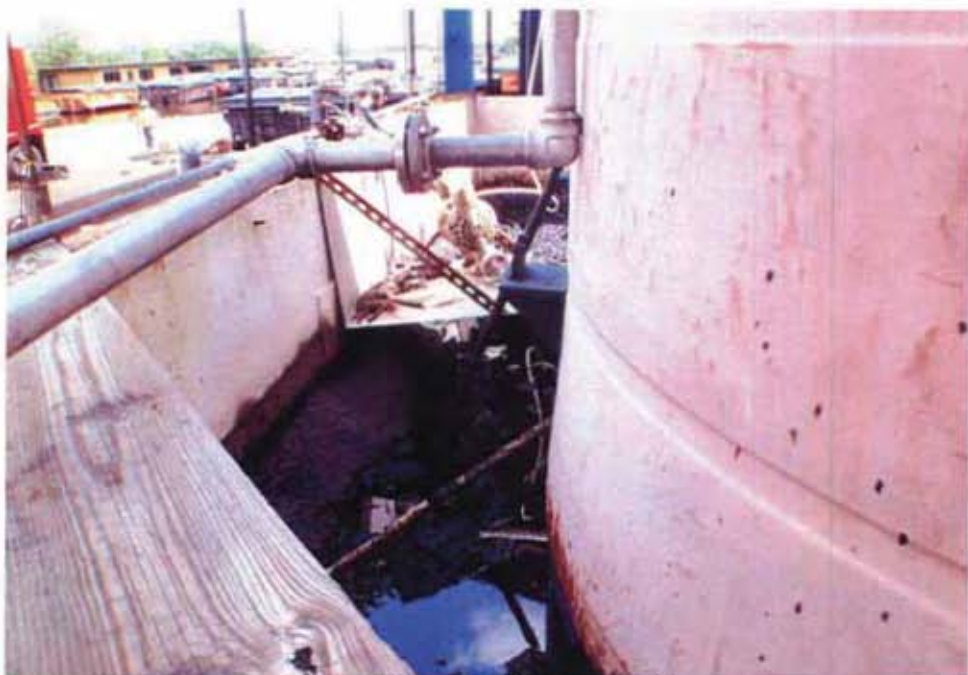


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PHOTOGRAPHS TAKEN ON JULY 28, 2010, Tj



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tceq072810-04



tceq072810-01



tceq072810-03

PHOTOGRAPHS TAKEN ON JULY 28, 2010

Tjh



tceq 072810-05

PHOTOGRAPHS TAKEN ON NOVEMBER 4, 2010, Tgh



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tceq110410-04



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PHOTOGRAPHS TAKEN ON NOVEMBER 4, 2010, Tgh



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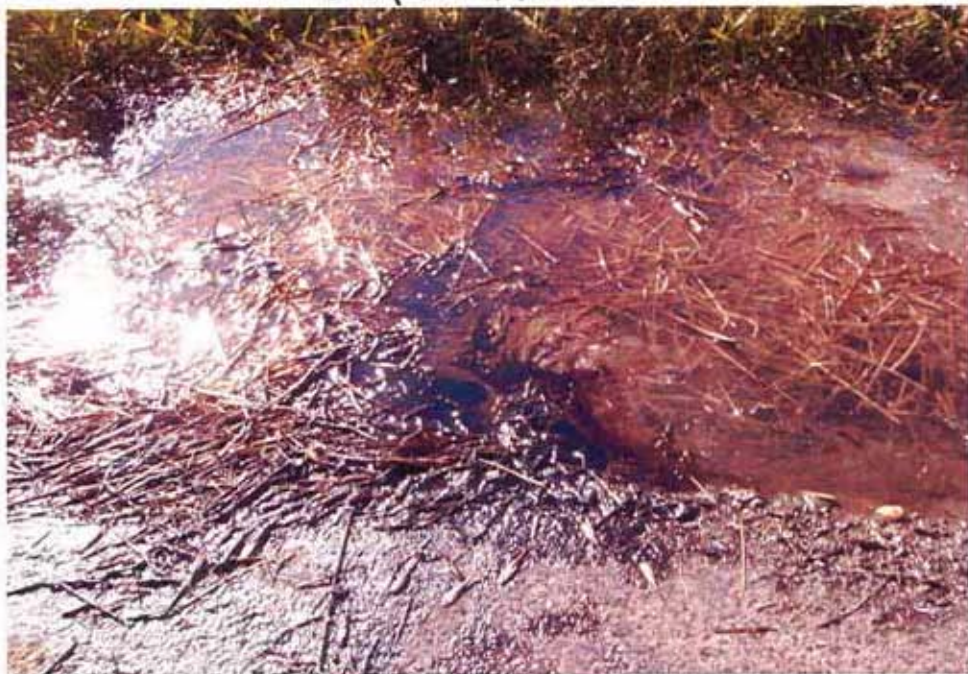
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PHOTOGRAPHS TAKEN ON NOVEMBER 5, 2010, TJC



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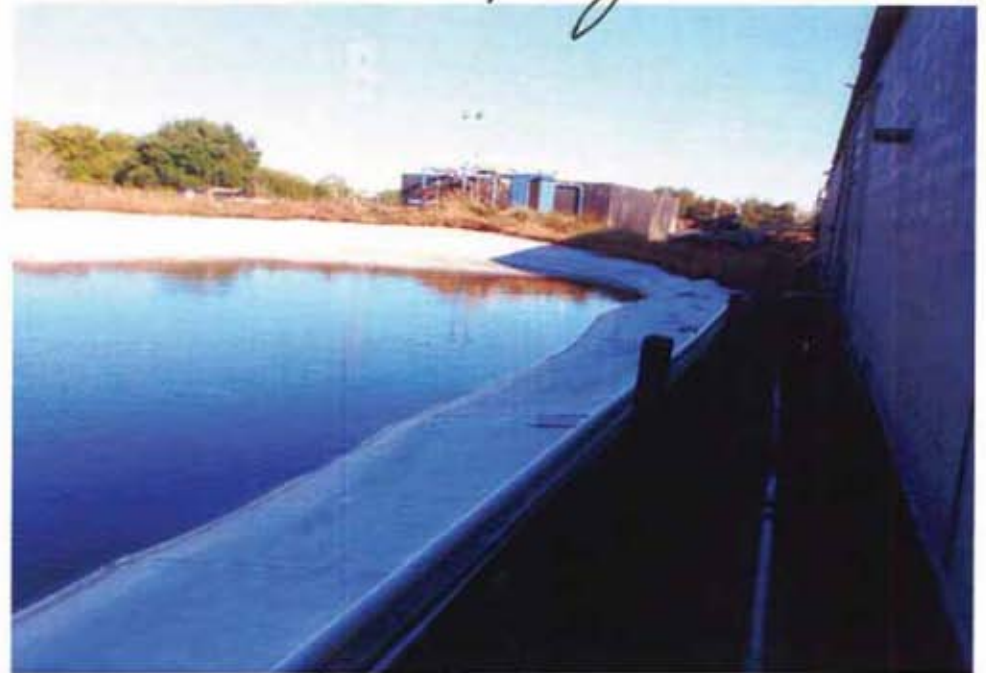


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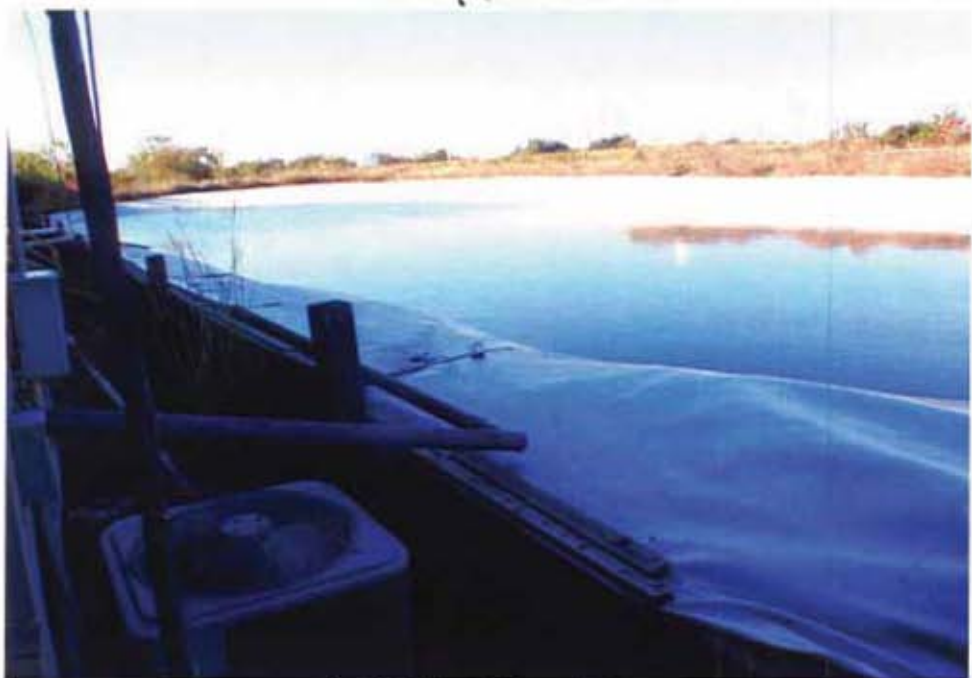
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PHOTOGRAPHS TAKEN ON NOVEMBER 5, 2010, TJA



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tceq 110510-24



tceq 110510-21



tceq 110510-23

PHOTOGRAPHS TAKEN ON NOVEMBER 5, 2010, TJA



tceq 110510-26



tceq 110510-28



tceq 110510-25



tceq 110510-27

PHOTOGRAPHS TAKEN ON NOVEMBER 5, 2010, Tyl



tceq 110510-30



tceq 110510-32



tceq 110510-29



tceq 110510-31

PHOTOGRAPHS TAKEN ON NOVEMBER 5, 2010, Tjh



tceq 110510-34



tceq 110510-36



tceq 110510-33



tceq 110510-35

PHOTOGRAPHS TAKEN ON NOVEMBER 5, 2010, Tjh



tceq110510-38



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tceq110510-37



tceq110510-39

PHOTOGRAPHS TAKEN ON NOVEMBER 5, 2010, Tjg



tceq110510-42



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tceq110510-43

PHOTOGRAPHS TAKEN ON NOVEMBER 5, 2010, Tgh



tceq 110510-46



tceq 110510-48

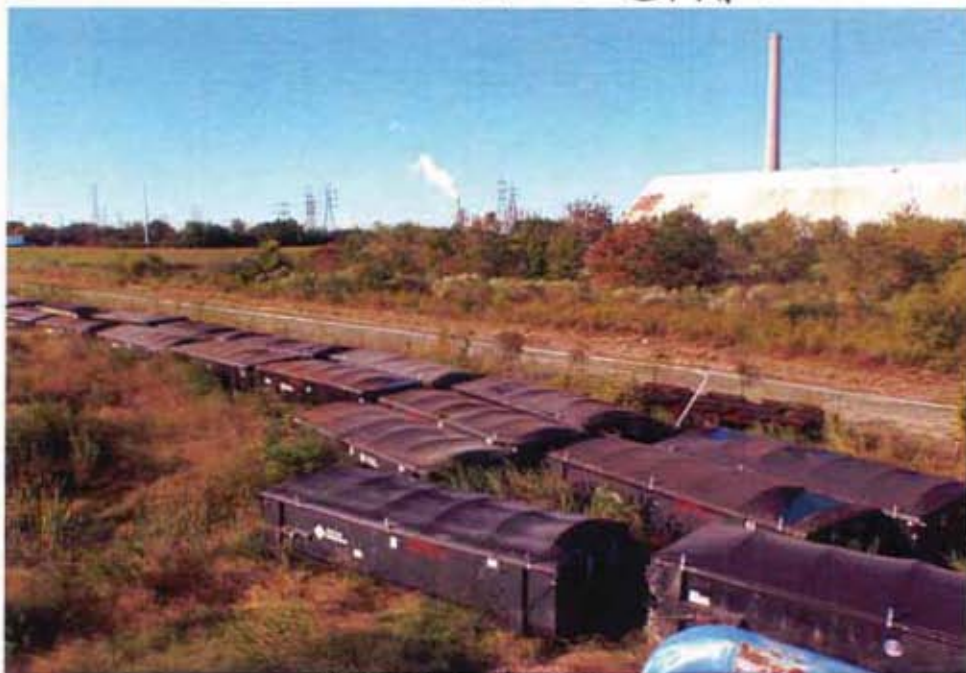


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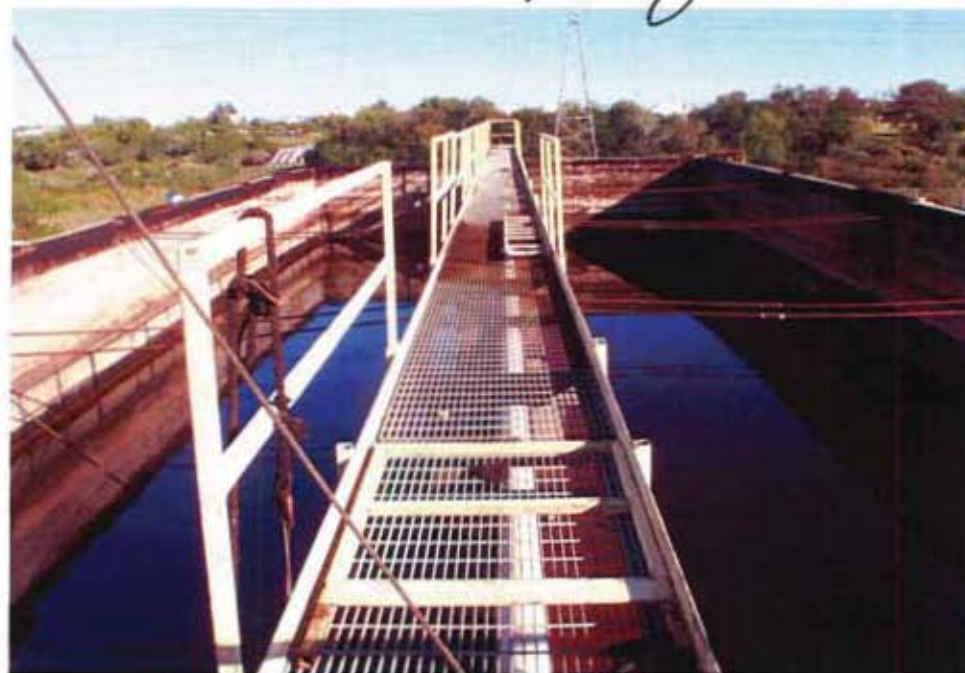


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PHOTOGRAPHS TAKEN ON NOVEMBER 5, 2010, T Jh



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tceq 110510-52



tceq 110510-49



tceq 110510-51

PHOTOGRAPHS TAKEN ON NOVEMBER 5, 2010, Tgh



tceq110510-54



tceq110510-56



tceq110510-53

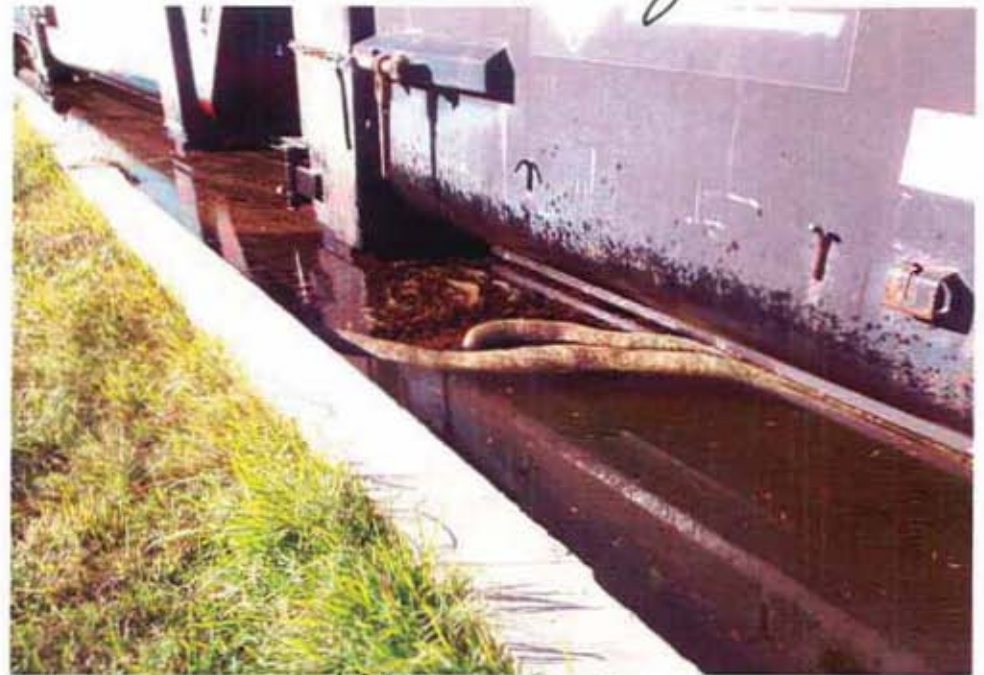


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PHOTOGRAPHS TAKEN ON NOVEMBER 5, 2010, Tja



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tceq 110510-60



tceq 110510-57



tceq 110510-59

PHOTOGRAPHS TAKEN ON NOVEMBER 5, 2010, Jy



tceq110510-62



tceq110510-64



tceq110510-61



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PHOTOGRAPHS TAKEN ON NOVEMBER 5, 2010, Tyla



tceq 110510-66



tceq 110510-68



tceq 110510-65



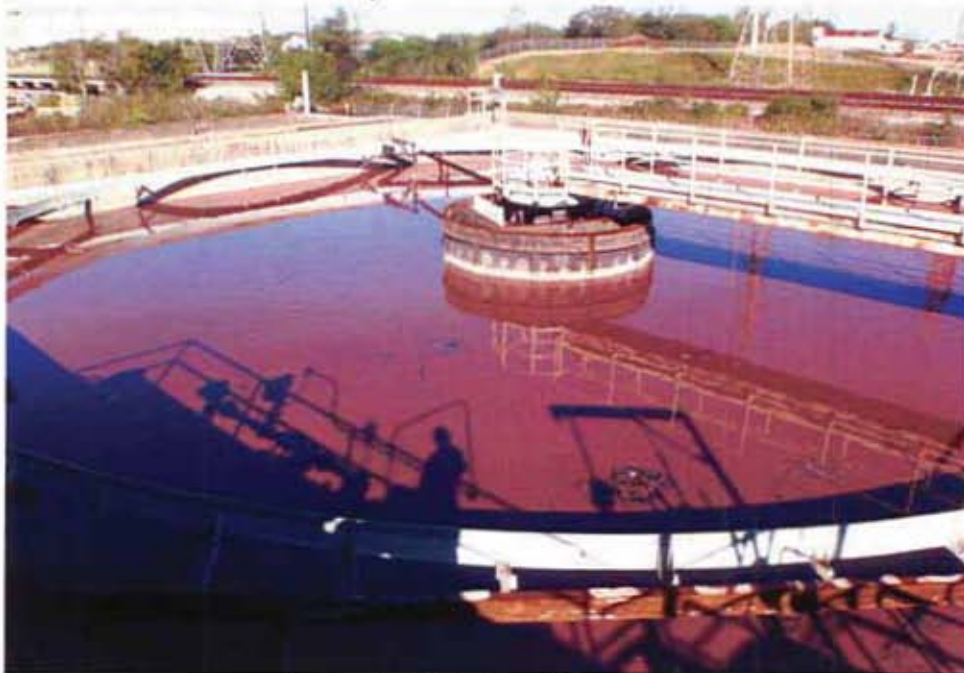
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PHOTOGRAPHS TAKEN ON NOVEMBER 5, 2010

TJA



tceq 110510-70



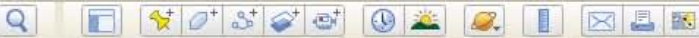
tceq 110510-69



tceq 110510-71

Reference 7:

Google Earth. Accessed on 2/11/11. 1 page.



MCC Recycling
MCC Recycling

200 N Richey St, Pasadena, TX 77506

© 2011 Google

©2010 Google

Reference 8:

Texas Commission on Environmental Quality. Two letters to MCC Recycling regarding Used Oil Registrations. February 12, 2009. 2 pages.

Buddy Garcia, *Chairman*
Larry R. Soward, *Commissioner*
Bryan W. Shaw, Ph.D., *Commissioner*
Mark R. Vickery, P.G., *Executive Director*



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

July 17, 2009

JAMES WISE
MCC RECYCLING LLP
6363 WOODWAY DR STE 1125
HOUSTON, TX 77057-1758

Re: Registration for Used Oil Activities at: MCC RECYCLING
200 RICHEY ST
PASADENA, TX 77506-1802

TCEQ Registration number: A85958 EPA ID Number: TXR000079409
Regulated Entity Number: RN105684302 Customer Number: CN603445016

ONE TIME REGISTRATION FOR THIS USED OIL HANDLER Issued: 02/06/2009

Dear Registrant:

The Texas Commission on Environmental Quality (TCEQ) has received your "Registration for Used Oil Handler" form. Our records indicate that your application is administratively complete and you are currently registered in the State of Texas as the following:

MARKETER WHO DIRECTS SHIPMENTS TO BURNER
MARKETER WHO FIRST CLAIMS UO
PROCESSOR

A copy of this registration must be retained at your designated place of business and if you are registered as a transporter, in each vehicle used to transport the above mentioned.

Your assigned TCEQ Registration Number is A85958. Please contact our office within 30 days, whenever:

- * your office mailing address changes;
- * your registered facility name changes;
- * there is a change in ownership; or
- * the operations or management methods are no longer adequately described in your existing registration.

If you should have any questions, please feel free to contact the Used Oil Registration Program at (512) 239-6832 option 2.

A handwritten signature in cursive script that reads "Matthew Southard".

Matthew Southard, IHW/MSW Team Leader
Registration and Reporting Section
Permitting and Registration Support Division

Buddy Garcia, *Chairman*
Larry R. Soward, *Commissioner*
Bryan W. Shaw, Ph.D., *Commissioner*
Mark R. Vickery, P.G., *Executive Director*



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

July 17, 2009

JAMES WISE
MCC RECYCLING LLP
6363 WOODWAY DR STE 1125
HOUSTON, TX 77057-1758

Re: Registration for Used Oil Filter Activities at: MCC RECYCLING
200 RICHEY ST
PASADENA, TX 77506-1802

TCEQ Registration number: A85958 EPA ID Number: TXR000079409
Regulated Entity Number: RN105684302 Customer Number: CN603445016

REGISTRATION FOR THIS USED OIL FILTER HANDLER

Issued: 02/06/2009

Expires: 12/31/2009

Dear Registrant:

The Texas Commission on Environmental Quality (TCEQ) has received your "Registration for Used Oil Filter Handler" form. Our records indicate that your application is administratively complete and you are currently registered in the State of Texas as the following:

PROCESSOR
STORAGE FACILITY

A copy of this registration must be retained at your designated place of business and if you are registered as a transporter, in each vehicle used to transport the above mentioned.

Your assigned TCEQ Registration Number is A85958. Please contact our office within 30 days, whenever:

- * your office mailing address changes;
- * your registered facility name changes;
- * there is a change in ownership; or
- * the operations or management methods are no longer adequately described in your existing registration.

If you should have any questions, please feel free to contact the Used Oil Registration Program at (512) 239-6832 option 2.

A handwritten signature in black ink, appearing to read "Vanessa J. Schiller".

Vanessa J. Schiller, Manager
Registration and Reporting Section
Permitting and Registration Support Division

cc: TCEQ REGION 12 - HOUSTON

Reference 9:

Texas Commission on Environmental Quality. Two letters to MCC Recycling regarding Used Oil Registrations. July 17, 2009. 2 pages.

Buddy Garcia, *Chairman*
Larry R. Soward, *Commissioner*
Bryan W. Shaw, Ph.D., *Commissioner*
Mark R. Vickery, P.G., *Executive Director*



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

July 17, 2009

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MCC RECYCLING LLP
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HOUSTON, TX 77057-1758

Re: Registration for Used Oil Filter Activities at: MCC RECYCLING
200 RICHEY ST
PASADENA, TX 77506-1802

TCEQ Registration number: A85958 EPA ID Number: TXR000079409
Regulated Entity Number: RN105684302 Customer Number: CN603445016

REGISTRATION FOR THIS USED OIL FILTER HANDLER

Issued: 02/06/2009

Expires: 12/31/2009

Dear Registrant:

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STORAGE FACILITY

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- * your office mailing address changes;
- * your registered facility name changes;
- * there is a change in ownership; or
- * the operations or management methods are no longer adequately described in your existing registration.

If you should have any questions, please feel free to contact the Used Oil Registration Program at (512) 239-6832 option 2.

A handwritten signature in cursive script, appearing to read "Vanessa J. Schiller".

Vanessa J. Schiller, Manager
Registration and Reporting Section
Permitting and Registration Support Division

cc: TCEQ REGION 12 - HOUSTON

Buddy Garcia, *Chairman*
Larry R. Soward, *Commissioner*
Bryan W. Shaw, Ph.D., *Commissioner*
Mark R. Vickery, P.G., *Executive Director*



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

February 12, 2009

James Wise
MCC Recycling LLP
6363 Woodway Dr., Ste 1125
Houston, TX 77057-1758

TCEQ Registration Number: A85958
EPA ID Number: TXR000079409

Regulated Entity Number: RN105684302
Customer Number: CN603445016

ONE TIME REGISTRATION FOR THIS USED OIL HANDLER
Issued: 02/06/2009

Dear Registrant:

The Texas Commission on Environmental Quality (TCEQ) has received your "Registration for Used Oil Handler" form.


A copy of this registration must be retained at your designated place of business and if you are registered as a transporter, in each vehicle used to transport used oil.

Your assigned TCEQ Registration Number is A85958. Please contact our office within 30 days, whenever:

- Your office mailing address changes;
- Your registered facility name changes;
- There is a change in ownership; or
- The operations or management methods are no longer adequately described in your existing registration.

If you should have any questions, please feel free to contact the Used Oil Registration Program at (512) 239-6413.

Sincerely,

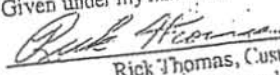

Matthew Southard, Team Lead
Registration and Reporting Section
Permitting and Remediation Support Division

cc: TCEQ Region 12 - Houston

STATE OF TEXAS
COUNTY OF TRAVIS

JUN 24 2009

I hereby certify this is a true and correct copy of a
Texas Commission on Environmental Quality (TCEQ)
document, which is filed in the Records of the Commission
Given under my hand and the seal of office.


Rick Thomas, Custodian of Records
Texas Commission on Environmental Quality

Buddy Garcia, *Chairman*
Larry R. Soward, *Commissioner*
Bryan W. Shaw, Ph.D., *Commissioner*
Mark R. Vickery, P.G., *Executive Director*



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

February 12, 2009

JAMES WISE
MCC RECYCLING LLP
6363 WOODWAY DR STE 1125
HOUSTON, TX 77057-1758

Re: Registration for Used Oil Filter Activities at: MCC RECYCLING
200 RICHEY ST
PASADENA, TX 77506

TCEQ Registration number: A85958 EPA ID Number: TXR000079409
Regulated Entity Number: RN105684302 Customer Number: CN603445016

REGISTRATION FOR THIS USED OIL FILTER HANDLER

Issued: 02/06/2009

Expires: 12/31/2009

Dear Registrant:

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PROCESSOR
STORAGE FACILITY

A copy of this registration must be retained at your designated place of business and if you are registered as a transporter, in each vehicle used to transport the above mentioned.

Your assigned TCEQ Registration Number is A85958. Please contact our office within 30 days, whenever:

- * your office mailing address changes;
- * your registered facility name changes;
- * there is a change in ownership; or
- * the operations or management methods are no longer adequately described in your existing registration.

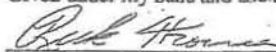
If you should have any questions, please feel free to contact the Used Oil Registration Program at (512) 239-6832 option 2.


Vanessa J. Schiller, Manager
Registration and Reporting Section
Permitting and Registration Support Division

cc: TCEQ REGION 12 - HOUSTON

STATE OF TEXAS
COUNTY OF TRAVIS JUN 24 2009

I hereby certify this is a true and correct copy of a Texas Commission on Environmental Quality (TCEQ) document, which is filed in the Records of the Commission Given under my hand and the seal of office.



Rick Thomas, Custodian of Records
Texas Commission on Environmental Quality

Reference 10:

Texas Commission on Environmental Quality. Compliance Investigation: Investigation #760182. June 12, 2009. 9 pages.

Texas Commission on Environmental Quality

Investigation Report

MCC RECYCLING LLP

CN603445016

MCC RECYCLING

RN105684302

Investigation # 760182

Incident #

Investigator: EDGAR ST. JAMES JR

Site Classification

MARKETERS
USED OIL FILTER HANDLER
USED OIL FILTER PROCESSOR
USED OIL FILTER STORAGE
USED OIL HANDLER
USED OIL PROCESSOR

Conducted: 06/03/2009 -- 06/12/2009

No Industry Code Assigned

Program(s): INDUSTRIAL AND
HAZARDOUS WASTE
NONPERMITTED
USED OIL

Investigation Type : Compliance Investigation

Location : 200 N RICHEY ST., PASADENA,
TX 77506

Additional ID(s) : F2039
TXR000079409
A85958

Address: 200 RICHEY ST;
PASADENA, TX 77506

Activity Type : REGION 12 - HOUSTON
IHWCDI - Case development investigation

Principal(s) :

Role	Name
RESPONDENT	MCC RECYCLING LLP

Contact(s) :

Role	Title	Name	Phone
Regulated Entity Contact	PRESIDENT	MR KLAUS GENSSLEF	Fax (713) 674-9990 Work (713) 674-9211
Participated in Investigation		MR DANNY MOORE	Work (713) 473-0013 Fax (713) 472-5668
Regulated Entity Mail Contact	PRESIDENT	MR KLAUS GENSSLEF	
Participated in Investigation	ENVIRONMENTAL, HEALTH AND SAFETY MANAGER	JAMES WISE	(713) 472-5668 Work (713) 473-0013

Other Staff Member(s) :

Role	Name
QA Reviewer	JON WELBORN
Supervisor	JASON YBARRA
Supervisor	NICOLE BEALLE

Associated Check List

Checklist Name

Unit Name

IHW GENERIC OTHER ISSUES OR VIOLATIONS (10 A85958 - Generic ITEMS)

Investigation Comments :

INTRODUCTION

On June 3 and 12, 2009, Mr. Edgar E. St. James, Jr. (the "investigator") of the Texas Commission on Environmental Quality (TCEQ) Region 12 - Houston Office, Waste Section, conducted an Industrial and Hazardous Waste (IHW) Case Development Investigation (CDI) of MCC Recycling (MCC) located at 200 N. Richey St., Pasadena (Harris County), Texas 77506. A location map is included in Attachment 1. The investigator was accompanied on the first day of the investigation by Ms. Stacy Pentecost and Mr. Gary Fogarty, Environmental Investigators of the Region 12 Water Quality Section. No advance notice of the investigations was given to the facility.

The primary purpose of the IHW CDI was to determine MCC's operational status. The facility had reported four unauthorized discharges of wastewater that occurred on May 15, 20, 26, and 28 2009 (Attachment 2). The wastewater allegedly originated from US Oil Recovery (USOR) located at 400 N. Richey St., Pasadena (Harris Co.), Texas 77506. On May 22 and 29, 2009, two temporary restraining orders (TROs) had been issued to U.S. Oil Recovery, L.P., Integrated MCC Solutions, LLC, and Genssler Environmental Holdings, LLC (Defendants) by the District Court of Harris County, Texas, 125th Judicial District, at the request of Harris County, Texas (Plaintiff) and the State of Texas acting by and through the TCEQ, a Necessary and Indispensable Party, to prevent any future discharges of wastewater (Attachment 3). The TROs ordered USOR to cease sending wastewater to MCC, and to seal every pipe, inlet, or other method of conveyance of wastewater from USOR to MCC. There were also several other requirements related to corrective measures to address the discharges.

In addition to the CDI of MCC, the investigator also conducted a CDI of USOR on June 3 and 12, 2009 to evaluate compliance with applicable IHW regulations. On or about March 1, 2009, USOR began diverting wastewater from the City of Pasadena's "new" Vince Bayou Wastewater Treatment Plant (WWTP) to MCC for storage and further treatment. The findings of the USOR investigation are discussed under Investigation No. 760180.

During the investigations, the facilities were represented by Mr. Klaus Genssler, President of MCC and USOR. A meeting was held with Mr. Genssler upon arrival at USOR at 9:55 AM on June 3, 2009. The purpose and scope of the investigations were discussed, and access to the properties was requested and granted. The investigations included a discussion of USOR's and MCC's current operations, an inspection of USOR's aeration basin (Bio-Reactors C-63 and C-64), and an inspection of the MCC facility.

An exit interview pertaining to both facilities was conducted on June 3, 2009 with Mr. Genssler, Ms. Pentecost, and Mr. Fogarty, and two additional USOR/MCC representatives in attendance: Mr. James R. Wise, EH&S Manager, and Mr. Thomas J. Lykos, Jr., Managing Director, Panoptic Strategic Advisors, LLC. TCEQ Exit Interview Forms were sent to Mr. Genssler by electronic mail (email) on June 7, 2009. The Exit Interview Form for MCC (Attachment 4) addressed two alleged violations: 1) unauthorized release of industrial wastewater from a clarifier on May 28, 2009, and 2) unauthorized storage and processing of industrial wastewater, and unauthorized storage of sludge. Records were requested on the amount of oil recovered at MCC during the period March 1 to May 31, 2009 based on Mr. Genssler's claims that this occurred. The subject CDI did not include a comprehensive Used Oil Investigation.

Also on June 3, 2009, Mr. Fogarty conducted an exit interview with facility representatives for the Industrial User Reconnaissance Investigation of USOR conducted that day (Investigation No. 760017), as well as for an Industrial User Reconnaissance Investigation of MCC (Investigation No. 748898) conducted on May 18, 20, and June 3, 2009. Mr. Fogarty addressed recent unauthorized discharges and releases at MCC in his report as alleged violations, including the May 28, 2009

release mentioned above. Therefore, the unauthorized release of industrial wastewater from a clarifier on May 28, 2009 is not further addressed in Mr. St. James's report, or in the subsequent Notice of Enforcement issued to MCC. In addition to the unauthorized discharges, Mr. Fogarty's report (Investigation No. 748898) addressed other alleged violations.

The investigator returned to USOR on June 12, 2009 to review records, and meet with Mr. Genssler. Mr. Genssler stated that he never received the Exit Interview Form for MCC, so a copy was provided to him at this time. Mr. Genssler discussed his objections to Alleged Violation No. 2 for (a) Storing industrial wastewater and sludge received from USOR without authorization, and (b) Processing industrial wastewater received from USOR without authorization. He also discussed USOR's and MCC's current operations.

On July 10, 2009, a second Exit Interview Form for MCC was provided to Mr. Genssler via email (Attachment 5). It listed an additional issue regarding MCC's designation of 2,000 gallons of recovered oil as used oil on a bill of lading dated July 8, 2009. The facility was requested to submit documentation in support of its claim that the oil was used oil and not waste oil.

GENERAL FACILITY AND WASTE PROCESS INFORMATION

MCC is situated on approximately 4.8 acres in an industrial, commercial and residential area near Vince Bayou within Drainage Segment 1007 of the San Jacinto River Basin (Attachment 6). The facility is surrounded by a chain link security fence. Per Mr. Genssler, MCC was purchased on January 15, 2009 from the City of Pasadena (City). A document available through the Texas Secretary of State database shows the entity name as MCC Recycling LLP, registered on February 24, 2009 by Klaus Genssler (Attachment 7).

The site was the former location of the City's "old" Vince Bayou Wastewater Treatment Plant. The facility previously treated domestic wastewater. It is now being refurbished by Mr. Genssler to handle industrial wastewater. The facility is divided into two parts by Vince Bayou, which flows across the site. The east and west plants are connected by a foot bridge over the bayou. The west plant contains the headworks, a trickling filter, a primary clarifier, an aeration basin (recently converted from a clarifier), and a lift station for transferring wastewater from the west plant to the east plant. The east plant has a small clarifier near the pump room, and connected to the pump room is the digester tank. Further towards the back of the property is an aeration basin. The remains of a sand filter are next to the aeration basin. Two final clarifiers are behind the aeration basin. To the west of the sand filter is the former chlorine contact chamber.

MCC was registered in the TCEQ Used Oil Program under TCEQ ID No.: A85958 and EPA ID No.: TXR000079409 as a used oil processor, used oil marketer who first claims used oil meets specifications, used oil marketer who directs shipments to burners, used oil filter storage facility, and used oil filter processor on February 6, 2009 (Attachment 8). MCC was not registered as a receiver or generator of industrial waste. For the purpose of this investigation, the facility was assigned temporary Solid Waste Identification No.: F2039. A copy of MCC's Core Data Form is included in Attachment 9.

Investigation on June 3, 2009

The current operational status of the facility was discussed with Mr. Genssler. He indicated that he decided to route USOR's wastewater (which he described as oily) to MCC for two purposes: 1) further recovery of oil in accordance with MCC's used oil processing authorization and 2) after oil recovery, additional treatment of the wastewater to further reduce the wastewater's biological oxygen demand (BOD). The USOR wastewater is sent via a pipeline extending from 400 N. Richey St. to 200 N. Richey St. Once the water is processed, it will be returned to USOR's control and discharged to the City from a new sampling point in the northwest corner of the MCC facility. A USOR letter dated May 26, 2009 from Mr. Genssler to Mr. Robin Green of the City's Department of Public Works states that USOR contracted with its affiliate MCC Recycling LLP to further process its pretreated industrial water for biological treatment in order to reduce the level of organic

compounds, but there is no mention of planned or proposed oil recovery operations (Attachment 10). Mr. Genssler stated that the City may be ready to accept the wastewater directly from USOR as soon as June 3, 2009. The investigator informed Mr. Genssler that MCC was not authorized to receive wastewater. This is addressed below in the section entitled Outstanding Alleged Violation.

During Mr. Genssler's discussion with Mr. Fogarty and Ms. Pentecost, it was revealed that USOR combined its industrial wastewater discharge with approximately 1,000 gallons per day of domestic wastewater from the USOR site. The combined stream was discharged to the POTW and then to MCC. This is a pretreatment issue addressed in Mr. Fogarty's USOR report (Investigation No. 760017).

The investigators proceeded to the MCC facility at approximately 11:00 AM on June 3, 2009. They were met at the site by Mr. Danny Moore of USOR who accompanied them around the property. Mr. Wise also met the investigators at MCC. During the investigation, no wastewater was crossing the headworks indicating USOR was not discharging to MCC. Wastewater was observed in the primary clarifier (capacity of 288,000 gallons) and the aeration basin. The primary clarifier and aeration basin had an oily appearing liquid floating on the surface of the wastewater. Soil had been excavated from the east side of the primary clarifier for future placement of a tank to hold recovered oil. Photos 1-6 in Attachment 11 show the units of the west plant.

On the east side of the bayou, the investigator visited the digester tank (capacity of 610,000 gallons), the aeration basin, the clarifier near the pump room, and the chlorine contact chamber. The digester, aeration basin, and clarifier were full of wastewater. An oily film was visible on much of the wastewater indicating MCC's oil recovery at the primary clarifier was not totally effective. The chlorine contact chamber contained oily appearing sludge. Mr. Fogarty stated that he previously observed this sludge in the chlorine contact chamber during a site visit on May 18, 2009. Photos 7-22 in Attachment 11 show the units of the east plant.

Upon returning to the USOR site, Mr. Genssler was questioned about the sludge. He stated that it was generated by USOR and shipped to MCC during a period when USOR's designated disposal facility, Seabreeze Landfill (MSW Permit No. 1539B, SWR No. H1539), was recertifying the waste profile for the material. The oily sludge is typically a nonhazardous Class 1 waste. Initially USOR accumulated the sludge in rolloff boxes at USOR, but eventually sent it to MCC. He indicated the sludge was now recertified and being taken gradually to the disposal facility. The investigator advised Mr. Genssler that MCC was not authorized to receive and store offsite generated sludge. The facility is not registered as a receiver of this material in the Industrial and Hazardous Waste Program. This is addressed below in the section entitled Outstanding Alleged Violation. A copy of any manifests associated with transporting the sludge from USOR to MCC were requested, but were never provided.

On August 11, 2009, the investigator contacted Seabreeze Landfill to verify the date of the waste profile recertification and establish the timeframe that sludge shipments were discontinued. Ms. Rose Bainum, Special Waste Coordinator, informed the investigator that the last shipment of sludge received by the landfill was on November 25, 2008. Shipments never resumed after that because USOR declined to submit analytical data for the sludge and, consequently, the waste profile was not reapproved. On August 13, 2009, Ms. Bainum provided a copy of the manifest associated with the last shipment of sludge received from USOR on November 25, 2008. The manifest and a copy of the last waste profile are included in Attachment 12.

Investigation on June 12, 2009

The investigator arrived at USOR at 9:15 AM to review and obtain records previously requested pertaining to USOR and MCC operations. The facility was represented by Mr. Genssler. None of the MCC records were available at this time.

Mr. Genssler did provide a copy of an undated email (Attachment 13) that he stated was sent to the

investigator after USOR's receipt of the June 7, 2009 Exit Interview Form pertaining to alleged violations of USOR. He stated that he had not received the Exit Interview Form pertaining to alleged violations of MCC. However, Item No. 5 on the email stated that USOR sent oily water and oily solids for further processing at MCC, which he considers a permitted activity at MCC based on its used oil registration allowing storage and processing. A copy of the Exit Interview Form for MCC was provided to Mr. Genssler during the meeting, which he signed (Attachment 4), and discussed, as follows:

Alleged Violation No. 1 - Unauthorized release of industrial wastewater to the ground and Vince Bayou on May 28, 2009. Mr. Genssler offered no disagreement. This violation is addressed in Mr. Fogarty's MCC report (Investigation No. 748898).

Alleged Violation No. 2 - (a) Storing industrial wastewater and sludge received from USOR without authorization, and (b) Processing industrial wastewater received from USOR without authorization. Mr. Genssler disagreed and indicated that the "oily water" sent from USOR contains a recoverable amount of used oil. Therefore, he claimed, it can be stored and processed at MCC under MCC's used oil processor Registration No. A85958. When told about the secondary containment requirement for used oil storage/processing tanks, he contended that this requirement only applied to the primary clarifier on the west side of the MCC facility. Per Mr. Genssler, this is the first and only unit that receives the oily water. It is from this unit that the oil is recovered. The units beyond the primary clarifier he considers wastewater storage/processing vessels subsequent to the oil recovery operation. He further stated that used oil had been recovered at MCC from the first day that USOR started piping the oily water to MCC.

A review of a document entitled Process Description submitted with MCC's application for its Used Oil Processor registration (Attachment 8) indicated a different used oil processing scenario than the one described above by Mr. Genssler. It states that MCC will receive used oil and oily wastewater into one of three decant tanks on an alternating basis. Oil decanted from the three decant tanks will then be stored in a finished oil tank for subsequent sale, and water from the decant tanks will be pumped to the clarifier. There is no mention of receiving offsite generated oily sludge.

When asked how MCC stored the recovered oil since the tank for that purpose wasn't installed until approximately June 8, 2009, Mr. Genssler responded that the recovered oil went directly from the primary clarifier into a transport vehicle. The investigator requested records showing how much oil was recovered. Mr. Genssler agreed to provide this documentation as soon as he could get it together. It was not provided.

Mr. Genssler sent a letter dated June 11, 2009 to Mr. Tanveer Anjum, Manager, IHW Permits Section requesting confirmation of USOR's interpretation of rules pertaining to used oil. Specifically, Mr. Genssler asked the TCEQ to confirm the following: (1) the material sent from USOR to MCC is an oily water mixture in accordance with Texas Administrative Code, Title 30, Part I, Chapter 324, and is authorized to be delivered to a facility with a used oil registration; and (2) MCC is authorized to receive, store and process the oily water from USOR pursuant to its used oil registration. By letter dated July 16, 2009, from Ms. Diane Goss, Staff Attorney, Environmental Law Division, to Mr. Lawrence Rothenberg, Attorney, representing USOR, the TCEQ informed USOR that the IHW Permits Section declines to respond to Mr. Genssler's request because the request concerns the subject matter of a pending law suit. Both letters are included in Attachment 14.

On July 9, 2009, Mr. Genssler provided via email the "first manifest" of used oil (2,000 gallons) delivered from MCC to USOR (Attachment 15), and indicated that additional used oil would be shipped from MCC to USOR that day. On July 10, 2009, Mr. Genssler was sent an Exit Interview Form by email (Attachment 5) expressing concern that MCC called the recovered material "used oil" on the manifest (Bill of Lading No. 080709 dated July 8, 2009) instead of waste oil. He was advised that Region 12 considered this an Additional Issue and was requested to provide supporting documentation. The following records were requested: a hazardous waste determination based on

sample analytical data, information on the sources of the oil including the types of facilities that generated the oil and how it was described on manifests/trip tickets when it was initially delivered to USOR, copies of manifests/trip tickets as examples, and information on what was done with the material sent from MCC to USOR. This is addressed below in the section entitled Outstanding Additional Issue.

Mr. Genssler responded by email on July 13, 2009, asking for clarification of the concern with his "used oil" designation (Attachment 16). A proposed response was prepared that was reviewed internally and forwarded by the TCEQ Litigation Division on July 27, 2009 to Mr. David Green, Assistant Attorney General, for possible communication to USOR. The proposed response is not included as an attachment because it is considered a confidential attorney client communication.

Information considered supplemental to what was provided in the July 13, 2009 email, is based on review of a process flow diagram contained in USOR's application for Permit No. 52123 [Process Flow Diagram for Industrial Class I and II & BOD Reduction, Revision 2, dated March 20, 2007 (Attachment 17)]. This diagram shows that used oil and wastewater contaminated with used oil are processed in a separate (non-permitted) system from Class I, II, and hazardous wastes, which are processed in permitted units. After used oil is recovered, the resulting wastewater combines with wastewater in the permitted units, specifically Bio-Reactor C-64, Bio-Reactor C-63, Bio-Reactor C-65 (yet to be built), Bio-Reactor C-66 (yet to be built), and Clarifier C-67 (yet to be built). The diagram indicates that clarified water is then discharged to the POTW. These permitted units are industrial waste management units authorized to manage nonhazardous waste. The units are listed on USOR's NOR (Attachment 18) as required by the permit, which incorporates 30 TAC Chapter 335, Subchapter A pertaining to industrial and hazardous waste management. The units are not maintained as used oil units, and are regulated under 30 TAC 335.

Regarding the USOR sludge stored at MCC, Mr. Genssler stated that regulation 30 TAC 335.2(d)(1) allows USOR to ship the sludge to a facility within 50 miles so long as the property is owned by the same person or entity. The investigator advised him this regulation applies only to noncommercial facilities. No documentation was provided to prove that the USOR and MCC sites are owned by the same person or entity. As a commercial facility, USOR must send its Class 1 waste to a facility with TCEQ authorization to receive this classification of waste.

BACKGROUND

MCC had not previously been investigated by the TCEQ Waste Section. The Agency compliance database showed no outstanding violations for industrial and hazardous waste, or municipal solid waste issues.

ADDITIONAL INFORMATION

During the investigation, certain letters and emails were obtained that indicated USOR ceased discharging process wastewater to the City on February 28, 2009, and began sending it to MCC on or about March 1, 2009 (Attachment 19). A May 20, 2009 email from USOR's Mr. James Wise stated that USOR ceased discharging industrial wastewater to the City of Pasadena POTW on February 28, 2009, and that discharging to the POTW would resume on May 21, 2009. However, discharging to the POTW did not resume until approximately June 12, 2009 based on verbal communication from Mr. Genssler during the meeting on June 12, 2009. Whether this discharge consisted of wastewater processed at MCC, or of wastewater discharged directly from USOR routed through USOR's new discharge point at 200 N. Richey St., or both was not clear. An email dated March 1, 2009, from Mr. Genssler to Mr. Green stated that USOR completed the tie-in between the 400 N. Richey facility and the west side of the Old Vince Bayou plant on Saturday (February 28, 2009), and that USOR would not be discharging any water to the City until further notice. Additionally, a letter dated April 23, 2009, from Mr. Daya Dayananda, City Assistant Director of Public Works, to Mr. Genssler indicated that USOR had not discharged their flow to the

City's Vince Bayou WWTP since March 1, 2009.

On June 8, 2009, a temporary injunction order was issued to the above-referenced Defendants by the District Court of Harris County, Texas, 125th Judicial District (Attachment 3). Among other things, it ordered the Defendants to (1) immediately cease unauthorized discharges from 200 N. Richey Road, (2) immediately notify Harris County Environmental Public Health and the State if there are any unauthorized discharges or spills from 200 North Richey Road, (3) immediately stop all intake to 200 North Richey Road until certain specified conditions are met, (4) a qualified wastewater operator must be on site at all times, (5) install an audible high level alarm on sumps and lift stations at the site at 200 North Richey Road, (6) any wastewater or oily wastewater or used oil that is removed from the site must be removed to a facility authorized to receive it by the TCEQ, and (7) remove within 60 days all contents from the chlorine contact chamber at 200 North Richey Road and dispose of it at a facility authorized by the TCEQ to receive the waste.

On August 20, 2009, it was found that MCC was accepting wastewater from USOR, and had modified their oil recovery operation from that described by Mr. Genssler on June 12, 2009. This was reported to the investigator by Mr. Charles Burner, Environmental Investigator of the Region 12 Waste Section, who accompanied Mr. Terry Vasut, Environmental Investigator of the Air Section, and Mr. Fogarty during an odor complaint investigation at MCC (Attachment 20). These individuals met with Mr. Andy Thomas, MCC Plant Manager, who went over the current plant operations. He explained that wastewater from USOR is piped through an oil/water separator located at the MCC headworks. Wastewater comes in one side of the oil-water separator, passes through the separator, and the recovered oil is stored in the oil/water separator until it is vacuumed off. Wastewater then passes on to the (primary) clarifier. The clarifier removes additional oil by skimming the oil off the surface of the water. The water is then pumped to the trickle filter, which is used as a holding tank. Water is pumped from the trickle filter to the aeration basin. Water from the aeration basin is pumped to a sump next to the clarifier where it gravity flows across the bayou to the east plant clarifier and digester, then to the City POTW. Mr. Burner did not visit the east plant. See Photos 23-25 in Attachment 11.

CONCLUSION

The industrial wastewater and sludge received by MCC is in violation of 30 TAC 335.2(n) for failure to obtain authorization prior to receiving industrial wastewater and sludge.

OUTSTANDING ALLEGED VIOLATION

The following alleged violation was documented during the Case Development Investigation conducted on June 3 and 12, 2009:

30 Texas Administrative Code (TAC) 335.2(n) - Permit Required (Category A2a)

MCC Recycling failed to obtain authorization (a) prior to storing industrial wastewater and sludge received from US Oil Recovery, and (b) prior to processing industrial wastewater received from US Oil Recovery. The facility does not have the permit required of commercial industrial solid waste facilities that receive industrial solid waste for discharge to a POTW. Additionally, MCC is not registered in the Solid Waste Program as a Receiver.

OUTSTANDING ADDITIONAL ISSUE

It is a concern that the material recovered from wastewater at MCC Recycling (MCC) is not used oil as indicated on Bill of Lading No. 080709 dated July 8, 2009, but is waste oil. The Bill of Lading showed 2,000 gallons were transported to US Oil Recovery (USOR). It is requested that MCC provide documentation in support of its claim that the recovered material was used oil. Documentation should include a hazardous waste determination based on sample analytical data, information on the sources of the material including the types of facilities that generated the material, how it was described on manifests/trip tickets when it was initially delivered to USOR

MCC RECYCLING - PASADENA

6/3/2009 to 6/12/2009 Inv. # - 760182

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including waste codes assigned by the generators, and what steps were taken by USOR to manage the deliveries as used oil. Provide copies of manifests/trip tickets as examples. Also provide information on what was done with the material sent to USOR by MCC.

NOE Date: 10/8/2009

Others

ASSOCIATED TO A NOTICE OF ENFORCEMENT

Track No: 378892

Compliance Due Date: To Be Determined

Violation Start Date: 3/1/2009

30 TAC Chapter 335.2(n)

Alleged Violation:

Investigation: 760182

Comment Date: 10/01/2009

MCC Recycling failed to obtain authorization (a) prior to storing industrial wastewater and sludge received from US Oil Recovery, and (b) prior to processing industrial wastewater received from US Oil Recovery. The facility does not have the permit required of commercial industrial solid waste facilities that receive industrial solid waste for discharge to a POTW. Additionally, MCC is not registered in the Solid Waste Program as a Receiver.

Recommended Corrective Action: To be determined.

Additional Issues

Description

Item #2

Additional Comments

It is a concern that the material recovered from wastewater at MCC Recycling (MCC) is not used oil as indicated on Bill of Lading No. 080709 dated July 8, 2009, but is waste oil. The Bill of Lading showed 2,000 gallons were transported to US Oil Recovery (USOR). It is requested that MCC provide documentation in support of its claim that the recovered material was used oil. Documentation should include a hazardous waste determination based on sample analytical data, information on the sources of the material including the types of facilities that generated the material, how it was described on manifests/trip tickets when it was initially delivered to USOR including waste codes assigned by the generators, and what steps were taken by USOR to manage the deliveries as used oil. Provide copies of manifests/trip tickets as examples. Also provide information on what was done with the material sent to USOR by MCC.

Signed _____
Environmental Investigator

Date _____

Signed _____
Supervisor

Date _____

Attachments: (in order of final report submittal)

___ Enforcement Action Request (EAR)

___ Maps, Plans, Sketches

___ Letter to Facility (specify type) : _____

___ Photographs

Investigation Report

___ Correspondence from the facility

___ Sample Analysis Results

___ Other (specify) : _____

___ Manifests

___ NOR

Reference 11:

U.S. Department of Health and Human Services. Health Consultation: MCC Recycling, LLP Facility. October 27, 2009. 16 pages.

Health Consultation

**MCC RECYCLING, LLP FACILITY
(SUBSIDIARY OF US OIL RECOVERY, LP)**

PASADENA, HARRIS COUNTY, TEXAS

EPA FACILITY ID: TXN000606990

OCTOBER 27, 2009

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333

Health Consultation: A Note of Explanation

An ATSDR health consultation is a verbal or written response from ATSDR to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

You May Contact ATSDR TOLL FREE at
1-800-CDC-INFO

or

Visit our Home Page at: <http://www.atsdr.cdc.gov>

HEALTH CONSULTATION

MCC RECYCLING, LLP FACILITY

(SUBSIDIARY OF US OIL RECOVERY, LP)

PASADENA, HARRIS COUNTY, TEXAS

EPA FACILITY ID: TXN000606990

Prepared By:

Exposure Investigations and Site Assessment Branch
Division of Health Assessment and Consultation
Agency for Toxic Substances and Disease Registry

Statement of Issues

The U.S. Environment Protection Agency (EPA) Region VI requested the Agency for Toxic Substances and Disease Registry (ATSDR) evaluate environmental data collected along the banks of Vince Bayou, an intertidal water feature that runs through the MCC Recycling, LLP facility located at 200 N. Richey Street, Pasadena, Texas (see Figure 1) [ATSDR 2009]. Specifically, EPA requested ATSDR review the levels of hazardous substances detected in soil and sediment samples to determine whether the detected levels pose a health hazard to recreational receptors.

This EPA request is being managed by ATSDR under their “Strike” process, which is a rapid-response, focused effort that usually does not include a comprehensive review of technical documents, site contaminants, and exposure pathways.

Site Description and History

MCC Recycling is a subsidiary of US Oil Recovery, LP. MCC Recycling is a treatment, storage, and disposal facility that receives wastes from another facility owned and operated by US Oil Recovery located at 400 N. Richey Street, Pasadena, Texas (see Figure 1). The US Oil Recovery facility processes and treats sludge and solids characteristically classified as hazardous waste, used oil, oily sludge and solids, municipal solid waste, and Class I and Class II Wastewater. Both facilities are located in an industrial area adjacent to the Houston Ship Channel in Pasadena, TX (see Figure 1).

The MCC Recycling facility was a former sewage treatment plant owned by the City of Pasadena that was taken out of service in 2004. In December 2008, the former sewage treatment plant was acquired by owners of US Oil Recovery to pre-treat wastewater from its oil recycling operations at 400 N. Richey. After pre-treatment, MCC Recycling initially planned to send the treated wastewater to the (new) Pasadena Sewage Treatment Plant; however, they later decided to apply for a NPDES permit from the Texas Commission on Environmental Quality (TCEQ) to discharge the treated wastewater into Vince Bayou. This permit, however, has not been approved.

Vince Bayou flows through the MCC Recycling facility and empties further downstream north of the facility directly into the Houston Ship Channel (see Figure 1). The bayou also extends south of the facility (i.e., upstream) into a residential area starting approximately $\frac{1}{4}$ – $\frac{1}{2}$ mile away from the facility. A public park (Memorial Park), 49 acres in size, sits along the southern stretch of the bayou (a green shaded polygon designating the outlined boundary of Memorial Park is shown in Figure 1). Fishing occurs along the bayou and near the facility. Residents also do recreational activities in or near the bayou at Memorial Park and could be potential receptors.

On May 20, 2009, MCC Recycling reported to the National Response Center (NRC Report #906156) a 600 gallon release of waste water from a holding tank used for gravity thickening [NRC 2009, EPA 2009]. Soil and sediment along the bayou was affected from the waste water release, which migrated into Vince Bayou.

Discussion

TCEQ contacted EPA Region VI and requested assistance with the May 2009 discharge from MCC Recycling. In response, EPA collected four surface soil samples: one from each side of Vince Bayou near the discharge area, one around the Roll Box on facility grounds, and one as a representative background sample further upstream in Memorial Park (see Figure 1). EPA also collected three sediment samples: one from each side of Vince Bayou near the discharge area, and one as background further upstream adjacent to Memorial Park (see Figure 1).

The soil and sediment samples were analyzed for metals, volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs). Of the detected substances in the soil and sediment samples, ATSDR selected arsenic, polycyclic aromatic hydrocarbons (PAHs), and total petroleum hydrocarbons for further in-depth analysis because their detected levels exceeded a representative environmental health comparison value or the substance itself had no available comparison value (see Table 1).

Arsenic levels detected in the soil and sediment samples, including background samples, ranged from 3.2 to 6.7 parts per million (ppm). The U.S. Geological Survey reports the mean and range of arsenic in soil and other surficial materials as 7.2 and <0.1–97 ppm, respectively [USGS 1984]. The site is located near a residential area and ATSDR assumed human exposure routes to soil are incidental ingestion, dermal contact, and inhalation.

Using an exposure scenario for an adult recreational receptor (70 kilogram (kg) ingesting 100 milligrams soil per day (mg/day) for 2 days a week for 52 weeks), the estimated exposure doses of arsenic would range from 2.20E-07 to 4.61E-07 mg/kg/day.

ATSDR also calculated exposure doses for a recreational receptor who is a small child. Using the exposure scenario of a 15 kg child ingesting 200 mg/day for 2 days a week for 52 weeks, the estimated exposure doses of arsenic would range from 1.53E-06 to 3.20E-06 mg/kg/day. All of the adult and child estimated exposure doses are below ATSDR's minimal risk level (MRL) for arsenic, 3.00E-04 mg/kg/day [ATSDR 2007]. Considering that the recreational receptor is an adult or child, their estimated exposure doses are approximately 2 to 3 orders of magnitude (i.e., 100 times to 1,000 times) lower than the MRL. Based on the exposure scenarios specific to this site, ATSDR does not expect exposure to arsenic in the soil to result in non-cancer adverse health effects.

Arsenic is carcinogenic to humans. However, there are no studies that specifically address the carcinogenic potential of arsenic in contaminated soil. For oral (ingestion) exposure, this conclusion is based primarily on studies performed in non-U.S. populations exposed to high levels of arsenic in drinking water. Outside the United States, skin cancer is consistently associated with chronically high oral exposures to arsenic from drinking water. It is sometimes associated with an increased risk of certain internal cancers (especially bladder cancer), as well [Tseng et al. 1968, Wu et al. 1989, Chen et al. 1986, Bates et al. 1992, NRC 1999]. However, U.S. studies have revealed no increase in bladder cancer associated with arsenic in drinking water [Lamm et al. 2004, Steinmaus et al. 2003]. Studies have not established any increased skin cancer risk in U.S. populations exposed to 100–200 ppb arsenic in drinking water [Goldsmith et al.

1972; Harrington et al. 1978; Morton et al. 1976; Southwick 1981; ATSDR 2007]. Of additional relevance to the soil exposure pathway is the fact that the bioaccessibility and bioavailability of arsenic are much lower in soil (3%–50%) than water [ATSDR 2007].

Overall, ingestion of soil and sediment from the discharge area is unlikely to produce any arsenic-related carcinogenic adverse health effects for the following two reasons: arsenic is not as bioavailable in soil as in water, and arsenic in soil and sediment represents an intermittent exposure (as compared to drinking water every day, all year, which is a chronic exposure).

PAH levels detected in the soil and sediment samples, including background samples, were all below 5 parts per million (ppm). PAHs include hundreds of different chemicals that commonly occur as mixtures within the environment. The most potent and best studied PAH is benzo(a)pyrene (B(a)P). Therefore, B(a)P was used as a surrogate to assess the relative toxicity of PAHs in soil. In determining the toxicity of a mixture of PAHs, the concentration of each PAH is multiplied by its Toxic Equivalency Factor (TEF), which results in its B(a)P Toxic Equivalency (TEQ) concentration (see Table 2). The TEQ basically relates each PAH's toxicity to that of B(a)P. The sum of the TEQs for each sample are then added together to determine the total B(a)P TEQ for the mixture. Total B(a)P TEQs ranged from 0.018 ppm (background sample) to 2.9 ppm (sediment sample). The total B(a)P TEQ concentrations for each sample were used to assess the potential health risks of the PAH mixture for this site (see Table 2) [EPA 1993, Cal EPA 2005].

Using the same exposure routes and scenarios for arsenic, the estimated exposure doses of PAHs for an adult recreational receptor ranged from 5.93E-09 to 1.23E-06 mg/kg/day. Similarly, ATSDR calculated the exposure dose for a small child, which ranged from 2.16E-08 to 4.47E-06 mg/kg/day. ATSDR has not derived MRLs for any of the selected PAHs; however, there are lowest-observed-adverse-effect-levels (LOAELs) and no-observed-adverse-effect-level (NOAELs) available [ATSDR 1995]. An intermediate NOAEL of 1.3 mg/kg/day was observed for mice exposed to B(a)P. The LOAEL (2.6 mg/kg/day) for B(a)P is based upon the appearance of gastric tumors. Systemic effects occurred at much higher exposure doses in acute and intermediate duration exposures [ATSDR 1995] for B(a)P and other PAHs. The estimated exposure doses for both adults and small children for PAHs in soil are several orders of magnitude (i.e., approximately 5 to 8) below the NOAEL and LOAEL for B(a)P. Based on the exposure scenarios specific for this site, ATSDR does not expect exposures to PAHs in the soil to result in non-cancer adverse health effects.

B(a)P, along with several other PAHs, have been classified as a “probable human carcinogen” [ATSDR 1995]. Human data specifically linking B(a)P, or any other PAH, to a carcinogenic effect are lacking. Although lung cancer has been found in humans who had received exposure to various mixtures of PAHs known to contain B(a)P – including cigarette smoke, roofing tar, and coke oven emissions – it is not possible to conclude from this information that B(a)P, or any other PAH, is the responsible agent [ATSDR 1995]. Incidental ingestion of soil is not a chronic exposure pathway (365 days per year, for life), but rather an intermittent one that varies from day to day, week to week, and

year to year; therefore, ATSDR expects no significant increase in cancer risk from the exposures to PAHs in the soil and sediment.

The soil and sediment samples were also analyzed for total petroleum hydrocarbons (TPHs). All of the samples, except the two background samples, showed appreciable levels of TPHs above the laboratory reporting limit. .

Before conducting a further in-depth analysis of the TPHs, ATSDR first considered the TPHs to be a whole petroleum product. The whole petroleum product considered for the in-depth analysis was crude oil. This assumption is based upon the description of operations conducted at the two facilities of interest, MCC Recycling and US Oil Recovery. Both facilities reclaimed, processed, and recycled a vast amount of waste associated with crude oil operations along the Gulf Coast of Louisiana and Texas. Second, ATSDR separated the TPHs into aromatic and aliphatic fractions. Crude oils are exceedingly complex mixtures that vary greatly depending on their source [ATSDR 1999]. Most of the chemicals in crude oils are hydrocarbons: straight, branched and cyclic alkanes (i.e., aliphatics); and aromatics including benzene, alkylbenzenes, naphthalenes and PAHs. Lab analyses of the soil and sediment samples showed no detection of benzene but the two alkylbenzenes (ethylbenzene and xylenes) were detected at less than negligible amounts; thus, the only aromatic fractions in the TPHs would consist mostly of naphthalenes and PAHs. Subtracting the summed concentrations of naphthalenes and PAHs from the total concentration of TPHs for each sample, this would give the total concentration of TPHs that are considered aliphatics (see Table 2, $C_6 - C_{35}$ (*Aliphatics Estimated*)).

The approach taken by ATSDR to evaluate the potential public health implications for TPHs is based on the efforts of the Total Petroleum Hydrocarbon Criteria Working Group (TPHCWG) of using a reduced number of TPH fractions (i.e., categorizing the TPHs into three groups of aliphatic fractions and three groups of aromatic fractions) [TPHCWG 1997a, TPHCWG 1997b]. ATSDR then established health effects screening values based on the toxicity of representative surrogate chemicals or mixtures for each of these groups, the same strategy commonly used to develop ATSDR minimal risk levels (MRLs). The table shown on page 5 presents the ATSDR TPH fractions and their surrogate compounds or mixtures. In general, the most toxic surrogate compound or mixture for each fraction is used to indicate the potential toxicity of the entire fraction.

Referring to Table 1, most of the TPHs were detected within the carbon range of $C_{12} - C_{35}$. Assuming the concentrations of compounds within the carbon range of $C_{12} - C_{16}$ are negligible, then the carbon range of the detected TPHs is $C_{>16} - C_{35}$ (see above table). Since the components of the aromatic fractions were already discussed in the PAH analysis, the remaining in-depth analysis will focus only on the aliphatic fractions of the TPHs.

Again, using the same exposure routes and scenarios for arsenic and PAHs, the estimated exposure doses of TPHs for an adult recreational receptor ranged from 1.42E-06 to 2.79E-05 mg/kg/day and a small child ranged from 1.12E-05 to 2.21E-04 mg/kg/day. An oral reference dose (RfD) of 2 mg/kg/day has been derived for the aliphatic fraction of TPHs with a carbon range of $C_{>16} - C_{35}$ assuming its toxicity is similar to "low" molecular weight mineral oils [TPHCWG 1997b, ATSDR 1999]. The oral RfD is based

on an intermediate NOAEL of 200 mg/kg/day observed in Fischer 344 (F344) rats [TPHCWG 1997b, ATSDR 1999]. The NOAEL was established on abnormalities observed in the liver. The estimated exposure doses for both adults and small children of TPHs in soil are several orders of magnitude (i.e., approximately 4 to 6) below the oral RfD for TPHs. Based on the exposure scenarios specific to this site, ATSDR does not expect exposures to TPHs in the soil to result in non-cancer adverse health effects.

ATSDR TPH Fractions and Representative Compounds

Chemical fraction, in EC ^a	Representative compounds
Aromatics	
EC ₆ – EC ₉	Benzene, toluene, ethylbenzene, xylenes
EC _{>9} – EC ₁₆	Isopropyl benzene, naphthalene
EC _{>16} – EC ₃₅	Fluorene, fluoranthene, benzo(a)pyrene
Aliphatics	
EC ₅ – EC ₈	<i>n</i> -Hexane
EC _{>8} – EC ₁₆	JP-5, JP-7, JP-8, kerosene, dearomatized petroleum stream
EC _{>16} – EC ₃₅	Mineral oils

^a EC = equivalent carbon number index. EC is based on equivalent retention times on a boiling point gas chromatograph (GC) column, normalized to n-alkanes

Source: [ATSDR 1999]

A number of studies of the carcinogenicity of dermal application of crude oil to animals have been reviewed by the International Agency for Research on Cancer (IARC), which concluded that there is limited evidence for the carcinogenicity of crude oil to experimental animals [IARC 1989a]. IARC also reviewed a cohort study of U.S. petroleum-producing and pipeline workers, and case control studies that included exposure during crude oil exploration and production [IARC 1989a], which concluded that there is inadequate evidence for the carcinogenicity of crude oil in humans. Additional investigations on occupational exposures in petroleum refining concluded that there is limited evidence that working in petroleum refineries entails a risk of skin cancer and leukemia [IARC 1989b]. Exposures encountered during petroleum refining, however, are not particularly relevant to exposures that occur at non-refinery or hazardous waste sites with crude oil. Due to the limited evidence and considering the exposure pathway of

a recreational receptor, ATSDR expects no significant increase in cancer risk from the exposures to TPHs.

Sampling and Data Limitations

ATSDR's review of the lab analyses for the soil and sediment samples showed no speciation analyses of the TPHs into aromatics and aliphatics. Without speciation analyses, most environmental health investigators assume the composition of TPHs is 50% aromatics and 50% aliphatics. This generic compositional split normally provides a health protective assumption without assuming that all of the detected hydrocarbons are aromatic. ATSDR, however, believed that this generic split was too conservative for the site since the assumed whole petroleum product for the TPHs was crude oil. Normally, aromatic hydrocarbons may account for about 1 to 20 percent of the total hydrocarbons in crude oil [Speight 1991]. This was indicative of the lab analyses for the soil and sediment samples, where the estimated aromatic fraction of TPHs ranged from 0.4 to 21 percent. Thus, ATSDR used these estimated aromatic fractions within their evaluation instead of the usual generic compositional assumption of 50% aromatics. Preferably, ATSDR recommends the use of analytical methods that do provide speciation of contaminants such as PAHs and TPHs, especially when collecting environmental samples from hazardous waste sites or facilities that store, treat, and dispose of crude oil.

Conclusions and Recommendations

Based on the exposure scenarios evaluated, ATSDR concludes that exposure to arsenic, PAHs, TPHs and other substances detected in the soil and sediment along the banks of Vince Bayou near the MCC Recycling facility does not pose a public health hazard to recreational receptors.

ATSDR recommends the current facility owners to continue and follow any imposed actions set by environmental regulatory authorities in regards to the past discharge into Vince Bayou as a measure to further reduce any associated exposure risks to recreational receptors walking along Vince Bayou.

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APPENDIX A. Tables

TABLES

TABLE 1**Concentrations in Soil/Sediment Samples collected from Vince Bayou (source: EPA Region 6)**

CHEMICAL SUBSTANCE	DETECTED CHEMICAL CONCENTRATIONS (ppm)												SOIL COMPARISON VALUES (ppm)		FURTHER PUBLIC HEALTH EVALUATION REQUIRED		
	Soil						Sediment									Soil	
	Background		East Side of Bayou		West Side of Bayou		Background		East Side of Bayou		West Side of Bayou		Roll Off Box				
Metals																	
Arsenic	4.10		3.20		4.20		6.70		3.60		4.20		4.60		0.5	CREG	YES
Barium	150.00	B	130.00	B	200.00	B	370.00	B	90.00	B	110.00	B	220.00	B	400	iMEG (pica child)	NO
Cadmium	0.48		0.57		0.80		0.43		0.58		0.62		0.87		1	iMEG (pica child)	NO
Chromium, Total (1:6 ratio Cr VI : Cr III)	13.00		11.00		16.00		10.00		14.00		20.00		18.00		280	RSL (carcinogenic)	NO
Lead	63.00		38.00		47.00		8.60		54.00		48.00		47.00		400	RSL (child)	NO
Mercury	0.093		0.13		0.36		0.063	U	0.26		0.11		0.31		4.3	RSL (child)	NO
Selenium	0.30	J	0.71	J	0.57	J	0.42	J	0.69	J	0.81	J	0.76	J	300	cEMEG (child)	NO
Silver	0.14	J	2.40		3.80		0.64	U	0.40	J	0.77	J	3.80		300	cEMEG (child)	NO
Volatile Organic Compounds (VOCs)																	
Acetone	0.011	U	0.013	U	0.012	U	0.021		0.084		0.71		0.013	U	4,000	iMEG (pica child)	NO
Ethylbenzene	0.0057	U	0.0063	U	0.0058	U	0.0066	U	0.015		0.009	U	0.0063	U	1,000	iMEG (pica child)	NO
Methylene Chloride	0.016	B	0.021	B	0.017	B	0.013	J/B	0.019	J/B	0.021	B	0.017	B	90	CREG	NO
Xylenes	0.0057	U	0.0063	U	0.0058	U	0.0066	U	0.041		0.009	U	0.0063	U	800	iMEG (pica child)	NO
Semi-Volatile Organic Compounds (SVOCs)																	
Bis(2-ethylhexyl)phthalate	0.14	U	0.68		0.68		0.033	U	1.90		1.10		0.51	J	50	CREG	NO
Butyl benzyl phthalate	0.11	U	0.38	J	0.15	J	0.026	U	0.82	U	0.27	J	0.50	U	10,000	RMEG (child)	NO
Di-n-butyl phthalate	0.11	U	0.51	U	0.095	J/B	0.0044	J/B	0.82	U	0.36	U	0.50	U	1,000	aEMEG (pica child)	NO
Di-n-octyl phthalate	0.17	U	0.76	U	0.70	U	0.017	J	0.60	J	0.25	J	0.75	U	800	iMEG (pica child)	NO
Polycyclic Aromatic Hydrocarbons (subcategory of SVOCs)																	
Benzo(a)anthracene	1.80		0.67		0.32		0.0044	J	1.30		0.91		0.28		See B[a]P TEQ Table (Table 2)		---
Benzo(b)fluoranthene	1.90		1.40		0.66	J	0.019	J	3.20		1.40		0.66	J	See B[a]P TEQ Table (Table 2)		---
Benzo(k)fluoranthene	1.40		0.97		0.28	J	0.039	U	1.90		0.91		0.23	J	See B[a]P TEQ Table (Table 2)		---
Benzo(a)pyrene	1.30		1.00		0.60		0.014		2.10		1.20		0.49		See B[a]P TEQ Table (Table 2)		---
Chrysene	1.70		0.95		0.60		0.013	U	2.20		1.30		0.51		See B[a]P TEQ Table (Table 2)		---
Indeno(1,2,3-cd)pyrene	0.54		0.56	J	0.43	J	0.013	J	1.40		0.81		0.29	J	See B[a]P TEQ Table (Table 2)		---
B[a]P TEQ	1.881		1.3695		0.775		0.017853		2.902		1.616		0.6411		0.1	CREG	YES
Dibenz(a,h)anthracene	0.21		0.51	U	0.29	J	0.014	J	0.84		0.32	J	0.50	U	0.015	RSL (carcinogenic)	YES
Acenaphthalene	0.086	U	0.38	U	0.35	U	0.02	U	0.62	U	0.091	J	0.38	U	3,400	RSL (child)	NO
Anthracene	0.21		0.25	U	0.23	U	0.013	U	0.41	U	0.15	J	0.25	U	20,000	iMEG (pica child)	NO
Benzo(g,h,i)perylene	0.43		0.31	J	0.31	J	0.026	U	1.20		0.68		0.50	U	None		YES
Fluoranthene	3.30		1.40		0.57		0.02	U	3.40		2.30		0.28	J	800	iMEG (pica child)	NO
Fluorene	0.057	U	0.25	U	0.23	U	0.013	U	0.41	U	0.10	J	0.25	U	800	iMEG (pica child)	NO

TABLE 1 (cont'd)**Concentrations in Soil/Sediment Samples collected from Vince Bayou (source: EPA Region 6)**

CHEMICAL SUBSTANCE	DETECTED CHEMICAL CONCENTRATIONS (ppm)												SOIL COMPARISON VALUES (ppm)		FURTHER PUBLIC HEALTH EVALUATION REQUIRED		
	Soil						Sediment									Soil	
	Background	East Side of Bayou	West Side of Bayou				Background	East Side of Bayou	West Side of Bayou				Roll Off Box				
Polycyclic Aromatic Hydrocarbons (subcategory of SVOCs)																	
2-Methylnaphthalene	0.11	U	0.51	U	0.46	U	0.026	U	0.20	J	0.19	J	0.50	U	2,000	cEMEG (child)	NO
Naphthalene	0.086	U	0.38	U	0.35	U	0.02	U	0.21	J	0.11	J	0.38	U	1,000	iEMEG (pica child)	NO
Phenanthrene	1.10		0.36		0.30		0.013	U	0.99		0.87		0.25	U		None	YES
Pyrene	2.50		1.20		0.76		0.02	U	2.80		1.90		0.61		2,000	RMEG (child)	NO
Total Petroleum Hydrocarbons (TPH)																	
C6 – C35	57.00	U	82.00		450.00		66.00	U	110.00		250.00		1400.00			None	YES
	57.00	U	63.00	U	58.00	U	66.00	U	100.00	U	90.00	U	130.00	U		---	---
C6 – C12 C12 – C28	57.00	U	56.00	J	300.00		66.00	U	68.00	J	160.00		950.00			---	---
>C28 – C35	57.00	U	26.00	J	150.00		66.00	U	42.00	J	82.00	J	410.00			---	---
C6 – C35 (Aliphatics Estimated)	57.00	U	70.90		443.26		66.00	U	86.82		236.76		1393.64			---	---
Notes: A substance is selected for further in-depth analysis if its maximum detected level exceeds the listed comparison value or if the substance has no available comparison value.																	
CREG = Cancer Risk Evaluation Guide																	
EMEG = Environmental Media Evaluation Guide for a specified exposure period (i.e., a – acute, i – intermediate, and c – chronic)																	
J = estimated value																	
J/B = estimated value; detected in blank sample																	
ppm = parts per million																	
RMEG = Reference Dose Media Evaluation Guide																	
RSL = Regional Screening Level (environmental screening values adopted in all EPA regions and as listed within tables of the following hyperlink: http://www.epa.gov/reg3hscd/risk/human/rb-concentration-table/Generic_Tables/index.htm)																	
U = not detected																	
--- = not applicable																	

TABLE 2**Conversion of Detected PAH Concentrations to Toxicity Equivalence Concentrations of Benzo[a]Pyrene**

POLYCYCLIC AROMATIC HYDROCARBON FRACTION	TEF	SOURCE	DETECTED CHEMICAL CONCENTRATIONS (ppm)													
			Soil						Sediment						Soil	
			Background		East Side of Bayou		West Side of Bayou		Background		East Side of Bayou		West Side of Bayou		Roll Off Box	
			Conc.	B[a]P TEQ	Conc.	B[a]P TEQ	Conc.	B[a]P TEQ	Conc.	B[a]P TEQ	Conc.	B[a]P TEQ	Conc.	B[a]P TEQ	Conc.	B[a]P TEQ
Benzo[a]anthracene	0.1	Cal EPA; US EPA	1.80	0.18	0.67	0.067	0.32	0.032	0.0044	0.00044	1.30	0.13	0.91	0.091	0.28	0.028
Benzo[b]fluoranthene	0.1	Cal EPA; US EPA	1.90	0.19	1.40	0.14	0.66	0.066	0.019	0.0019	3.20	0.32	1.40	0.14	0.66	0.066
Benzo[k]fluoranthene	0.1	Cal EPA	1.40	0.14	0.97	0.097	0.28	0.028	0.002	0.0002	1.90	0.19	0.91	0.091	0.23	0.023
Benzo[a]pyrene	1	Cal EPA; US EPA	1.30	1.3	1.00	1	0.60	0.6	0.014	0.014	2.10	2.1	1.20	1.2	0.49	0.49
Chrysene	0.01	Cal EPA	1.70	0.017	0.95	0.0095	0.60	0.006	0.0013	0.000013	2.20	0.022	1.30	0.013	0.51	0.0051
Indeno[1,2,3-c,d]pyrene	0.1	Cal EPA; US EPA	0.54	0.054	0.56	0.056	0.43	0.043	0.013	0.0013	1.40	0.14	0.81	0.081	0.29	0.029
Benzo[j]fluoranthene	0.1	Cal EPA	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Dibenz[a,i]acridine	0.1	Cal EPA	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Dibenz[a,h]acridine	0.1	Cal EPA	---	---	---	---	---	---	---	---	---	---	---	---	---	---
7H-dibenzo[c,g]carbazole	1	Cal EPA	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Dibenzo[a,e]pyrene	1	Cal EPA	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Dibenzo[a,h]pyrene	10	Cal EPA	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Dibenzo[a,i]pyrene	10	Cal EPA	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Dibenzo[a,l]pyrene	10	Cal EPA	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,6-dinitropyrene	10	Cal EPA	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,8-dinitropyrene	1	Cal EPA	---	---	---	---	---	---	---	---	---	---	---	---	---	---
5-methylchrysene	1	Cal EPA	---	---	---	---	---	---	---	---	---	---	---	---	---	---
6-nitrochrysene	10	Cal EPA	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2-nitrofluorene	0.01	Cal EPA	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1-nitropyrene	0.1	Cal EPA	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4-nitropyrene	0.1	Cal EPA	---	---	---	---	---	---	---	---	---	---	---	---	---	---
B[a]P TEQ (total)				1.881		1.3695		0.775		0.017853		2.902		1.616		0.6411
Notes: B(a)P = benzo(a)pyrene ppm = parts per million TEF = Toxic Equivalency Factor TEQ = Toxic Equivalency --- not applicable =																

APPENDIX B. Figures

FIGURES

Figure 1

Site Map



Reference 12:

U.S. Environmental Protection Agency. Pollution/Situation Reports #1-8: Site A6X7. 25 pages.

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United States Environmental Protection Agency

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US Oil Recovery
Pasadena, TX - EPA Region VI
POLREP #1
Initial

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U.S. ENVIRONMENTAL PROTECTION AGENCY
POLLUTION/SITUATION REPORT
US Oil Recovery - Removal Polrep



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region VI

Subject: POLREP #1
Initial
US Oil Recovery
A6X7
Pasadena, TX
Latitude: 29.7177400 Longitude: -95.2210530

To:
From: Adam Adams, OSC
Date: 7/2/2010
Reporting Period: First 24 Hours

1. Introduction

1.1 Background

Site Number:	Contract Number:
D.O. Number:	Action Memo Date:
Response Authority: CERCLA	Response Type: Emergency
Response Lead: EPA	Incident Category: Removal Action
NPL Status: Non NPL	Operable Unit:
Mobilization Date: 7/1/2010	Start Date: 7/1/2010
Demob Date:	Completion Date:
CERCLIS ID:	RCRIS ID:
ERNS No.:	State Notification:
FPN#:	Reimbursable Account #:

1.1.1 Incident Category

Emergency Response/Emergency Removal Action

1.1.2 Site Description

US Oil Recovery is located on approximately 13 acres of land just north of the City of Pasadena, Texas north of Texas Highway 225. US Oil Recovery performed municipal and industrial wastewater pretreatment of Class I and Class II wastewater, characteristically hazardous waste, used oil and oily sludges, and municipal solid waste.

1.1.2.1 Location

US Oil Recovery is located at 400 N. Richey, Pasadena, Harris County, Texas 77506.

1.1.2.2 Description of Threat

Approximately 200 roll-off boxes (most labelled "Hazardous Waste Oct 09" or "Hazardous Waste Dec 09"), approximately 250 plus drums and approximately 200 plus 300 gallon totes are located throughout the site in no particular arrangement. A number of the roll-off boxes are not properly secured and open to the elements. A retention pond is located on the western side of the site and contains unknown chemicals. Additionally, there is a tank battery on the north end of the facility that contains approximately 24 aboveground storage tanks (AST's). The integrity of the AST's and secondary containment are not determined, but signs indicate potential issues. There is a large bioreactor on the northwest corner of the property that has no secondary containment and deteriorating walls. There are no employees operating the facility, and restriction of access. Any significant rainfall could and would cause an overflow of the retention pond, some rolloff boxes, the tank battery containment, and several on-site basins. Drainage is to primarily to the north and to the west, both directly flowing into Vincent Bayou, approximately 100 feet from the property line.

1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results

Historical inspections/investigations conducted by the Harris County Public Health and Environmental Services and the Texas Commission on Environmental Quality have shown elevated levels of benzene and chlorinated solvents in some of the waste stored on-site.

2. Current Activities

2.1 Operations Section

2.1.1 Narrative

US Oil Recovery opened for business in May 2002 in Pasadena, Texas to handle used oil. In its proprietary plant, US Oil Recovery performed municipal and industrial wastewater pretreatment of Class I and Class II wastewater, characteristically hazardous waste, used oil and oily sludges, and municipal solid waste. The facility is located on approximately 13 acres located north of the City of Pasadena at 400 N. Richey.

2.1.2 Response Actions to Date

On 1 July 2010 Harris County Public Health and Environmental Services (HCPHES) contacted the National Response Center (NRC) at approximately 17:27 to file a report (NRC # 948255) concerning an ongoing release from US Oil Recovery located at 400 N. Richey. The report indicated the company had vessels and tanks containing hazardous waste that were actively leaking and contaminating Vincent Bayou. EPA Phone Duty Officer activated OSC Adam Adams and START to respond to the incident. OSC Adams and START mobilized to the site and conducted an external site walk at 10:00 pm due to limited site access, limited visibility, and flooding.

On 2 July 2010 EPA OSC Adams, TCEQ, HCPHES, and START mobilized at approximately 07:45 to the site and conducted a perimeter site walk. During the initial site visit EPA, TCEQ, HCPHES, and START noted material actively flowing off-site, roll-off boxes labeled as containing hazardous waste and having no tarp cover, and a large break in the perimeter fencing on the northwest side. Based on these observations, EPA OSC Adams requested access to the property from the property owner's legal counsel.

At approximately 12:38 OSC Adams received a signed access agreement from the attorney representing US Oil Recovery granting unconditional access to the property for response action. OSC Adams, TCEQ, and START entered the site to begin the detailed site assessment. During the assessment EPA observed an uncontrolled release of liquids from the retention pond, secondary containments, and roll-off boxes labeled as containing hazardous waste. Based on these visual observations, EPA OSC Adams activated the Emergency and Rapid Response Services (ERRS) contractor to the site to stabilize the site and prevent further migration of site related constituents off-site.

At approximately 1440 the ERRS contractor arrived on-site and began stabilizing the site. Site stabilization activities included the lowering of liquids in critical roll-off boxes, secondary containment areas (areas that were actively overflowing), and pooled areas throughout the site. ERRS also deployed hard and sorbent boom and sorbent pads to minimize the off-site migration of contaminants.

The site received approximately 7 to 12-inches of rain during the day causing Vince Bayou to flood N. Richey street, minimizing site access and preventing additional resources and equipment to mobilize to the site. At the one point during the day, N. Richey street directly in front of the site access was covered by over 4 feet of water, and Vincent Bayou had raised to within 15 feet of the property fence line.

2.1.3 Enforcement Activities, Identity of Potentially Responsible Parties (PRPs)

The Potential Responsible Party is US Oil Recovery, LLC.

2.2 Planning Section

2.2.1 Anticipated Activities

On 3 July 2010 additional supplies and equipment to include frac tanks will be mobilized to the site to further stabilize the site, contain uncontrolled materials, and allow for a more detailed investigation. After the site is stabilized, a detailed investigation will be conducted to determine threats and hazards.

2.2.1.1 Planned Response Activities

ERRS will mobilize frac tanks to allow for bulk storage of contact water contaminated by overflowing rolloff boxes, secondary containments, and containers on-site. Site control will be maintained. Site will be further secured from public access.

2.2.1.2 Next Steps

2.2.2 Issues

Due to the severe rain (approximately 7 plus inches), site progress was slow due to limited access to the site for equipment and resources. Primary objectives during the significant rain event were to contain contamination from off-site migration.

2.3 Logistics Section

2.4 Finance Section

2.5 Safety Officer

2.6 Liaison Officer

2.7 Information Officer

3. Participating Entities**3.1 Unified Command****3.2 Cooperating and Assisting Agencies**

Cooperating and assisting agencies involved in the site are the Texas Commission on Environmental Quality (TCEQ) and Harris County Public Health and Environmental Services (HCPHES).

4. Personnel On Site

Personnel on-site include EPA, START, and ERRS.

Additional personnel on-site at their discretion are representatives from TCEQ and HCPHES.

5. Definition of Terms**6. Additional sources of information****6.1 Internet location of additional information/reports**

Additional information can be obtained from the website www.epaosc.org/USOilRecovery-Pasadena.

6.2 Reporting Schedule

Additional POLREP's will be provided as the response efforts continue.

7. Situational Reference Materials

Additional information can be obtained from the website www.epaosc.org/USOilRecovery-Pasadena.

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US Oil Recovery
Pasadena, TX - EPA Region VI
POLREP #2
Progress Report

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U.S. ENVIRONMENTAL PROTECTION AGENCY
POLLUTION/SITUATION REPORT
US Oil Recovery - Removal Polrep



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region VI

Subject: POLREP #2
Progress Report
US Oil Recovery
A6X7
Pasadena, TX
Latitude: 29.7177400 Longitude: -95.2210530

To:
From: Adam Adams, OSC
Date: 7/8/2010
Reporting Period: First 168 Hours (1 week)

1. Introduction

1.1 Background

Site Number:	A6X7	Contract Number:	
D.O. Number:		Action Memo Date:	
Response Authority:	CERCLA	Response Type:	Emergency
Response Lead:	EPA	Incident Category:	Removal Action
NPL Status:	Non NPL	Operable Unit:	
Mobilization Date:	7/1/2010	Start Date:	7/1/2010
Demob Date:		Completion Date:	
CERCLIS ID:		RCRIS ID:	
ERNS No.:		State Notification:	
FPN#:		Reimbursable Account #:	

1.1.1 Incident Category

Emergency Response/Emergency Removal Action

1.1.2 Site Description

US Oil Recovery is located on approximately 13 acres of land just north of the City of Pasadena, Texas north of Texas Highway 225. US Oil Recovery performed municipal and industrial wastewater pretreatment of Class I and Class II wastewater, characteristically hazardous waste, used oil and oily sludges, and municipal solid waste.

1.1.2.1 Location

US Oil Recovery is located at 400 N. Richey, Pasadena, Harris County, Texas 77506. US Oil Recovery has an affiliated facility called MCC (USOR#2) that is located at 200 N. Richey, Pasadena, Texas 77506.

1.1.2.2 Description of Threat

Approximately 200 roll-off boxes (most labeled "Hazardous Waste Oct 09" or "Hazardous Waste Dec 09"), approximately 400 plus drums and approximately 100 plus 300 gallon totes are located throughout the site in no particular arrangement. A number of the roll-off boxes are not properly secured and open to the elements. A retention pond is located on the western side of the site and contains unknown chemicals. Additionally, there is a tank battery on the north end of the facility that contains approximately 24 aboveground storage tanks (AST's). The integrity of the AST's and secondary containment are not determined, but signs indicate potential issues. There is a large bioreactor on the northwest corner of the property that has deteriorating walls and a secondary containment approximately 1 foot tall. There are no employees operating the facility, and restriction of access to the public. Any significant rainfall could and would cause an overflow of the retention pond, some rolloff boxes, the tank battery containment, and several on-site basins. Drainage is primarily to the north and to the west, both directly flowing into Vincent Bayou, approximately 100 feet from the property line.

1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results

Historical inspections/investigations conducted by the Harris County Public Health and Environmental Services and the Texas Commission on Environmental Quality have shown elevated levels of benzene and chlorinated solvents in some of the waste stored on-site.

2. Current Activities**2.1 Operations Section****2.1.1 Narrative**

US Oil Recovery opened for business in May 2002 in Pasadena, Texas to handle used oil. In its proprietary plant, US Oil Recovery performed municipal and industrial wastewater pretreatment of Class I and Class II wastewater, characteristically hazardous waste, used oil and oily sludges, and municipal solid waste. The facility is located on approximately 13 acres located north of the City of Pasadena at 400 N. Richey. The MCC facility is located on approximately 5 acres located north of the City of Pasadena at 200 N. Richey with a mailing address and business office at 400 N. Richey.

2.1.2 Response Actions to Date

Response efforts were expanded to include both the USOR facility located at 400 N. Richey Street as well as the connected MCC (USOR#2) facility located at 200 N. Richey Street, due to an uncontrolled discharge of hazardous material from two locations at the MCC (USOR#2) facility. To date, a total of 17 Frac tanks, 1 vacuum truck, and 5 pumps are/were in use on the response to contain and maintain site contact water and leaking containment areas. Sampling has been conducted by ERRS contractors to perform waste characterization and profiling for disposal, and START contractors to assess site runoff and containment areas. Analytical results are expected the week of 071410.

START performed tank gauging on the tank battery located on the north end of USOR site in Level C PPE. Based on initial observations, the tanks are full of a mixture of oil and water. An inventory of the 225 roll-off boxes located at USOR was conducted by START for inventory control and verification of the integrity of the containers. Uncovered roll-off boxes have been tarped and secured from future overflow. Drums, totes, and containers on-site are being assessed, inventoried, and segregated to ensure all containers are stable and not staged in an unsafe manner.

The fence located on the northwest side of the USOR site was repaired, securing the site from public access. No trespassing signs were posted at both facilities and each facility was secured with new locks.

2.1.3 Enforcement Activities, Identity of Potentially Responsible Parties (PRPs)

The Potential Responsible Parties are US Oil Recovery, LLC and MCC (USOR#2), both with the same owner.

2.2 Planning Section**2.2.1 Anticipated Activities****2.2.1.1 Planned Response Activities**

Continue maintenance operations on containment areas located at USOR and MCC. Continue to assess, inventory and segregate drums, totes, and containers on-site to ensure all containers are stable and not staged in an unsafe manner.

2.3 Logistics Section**2.4 Finance Section****2.5 Safety Officer****2.6 Liaison Officer****2.7 Information Officer****3. Participating Entities****3.1 Unified Command****3.2 Cooperating and Assisting Agencies**

Cooperating and assisting agencies involved in the site are the Texas Commission on Environmental Quality (TCEQ) and Harris County Public Health and Environmental Services (HCPHES).

4. Personnel On Site

Personnel on-site include EPA, START, and ERRS.

Additional personnel on-site at their discretion are representatives from TCEQ and HCPHES.

5. Definition of Terms**6. Additional sources of information****6.1 Internet location of additional information/reports**

Additional information can be obtained from the website www.epaosc.org/USOilRecovery-Pasadena.

6.2 Reporting Schedule

Additional POLREP's will be provided as the response efforts continue.

7. Situational Reference Materials

Additional information can be obtained from the website www.epaosc.org/USOilRecovery-Pasadena.

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US Oil Recovery
Pasadena, TX - EPA Region VI
POLREP #3
Progress Report

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U.S. ENVIRONMENTAL PROTECTION AGENCY
POLLUTION/SITUATION REPORT
US Oil Recovery - Removal Polrep



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region VI

Subject: POLREP #3
Progress Report
US Oil Recovery
A6X7
Pasadena, TX
Latitude: 29.7177400 Longitude: -95.2210530

To:
From: Adam Adams, OSC
Date: 7/15/2010
Reporting Period: Week 2

1. Introduction

1.1 Background

Site Number:	A6X7	Contract Number:	
D.O. Number:		Action Memo Date:	
Response Authority:	CERCLA	Response Type:	Emergency
Response Lead:	EPA	Incident Category:	Removal Action
NPL Status:	Non NPL	Operable Unit:	
Mobilization Date:	7/1/2010	Start Date:	7/1/2010
Demob Date:		Completion Date:	
CERCLIS ID:		RCRIS ID:	
ERNS No.:		State Notification:	
FPN#:		Reimbursable Account #:	

1.1.1 Incident Category

Emergency Response/Emergency Removal Action

1.1.2 Site Description

US Oil Recovery is located on approximately 13 acres of land just north of the City of Pasadena, Texas north of Texas Highway 225. US Oil Recovery performed municipal and industrial wastewater pretreatment of Class I and Class II wastewater, characteristically hazardous waste, used oil and oily sludges, and municipal solid waste.

1.1.2.1 Location

US Oil Recovery is located at 400 N. Richey, Pasadena, Harris County, Texas 77506. US Oil Recovery has an affiliated facility called MCC (USOR#2) that is located at 200 N. Richey, Pasadena, Texas 77506.

1.1.2.2 Description of Threat

Approximately 225 roll-off boxes (most labeled "Hazardous Waste Oct 09" or "Hazardous Waste Dec 09"), approximately 600 plus drums and approximately 100 plus 300 gallon totes are located throughout the site in no particular arrangement. A number of the roll-off boxes were not properly secured (i.e. missing/damaged tarps, poles, or bows) and open to the elements. A retention pond is located on the western side of the site and contains unknown chemicals. Additionally, there is a tank battery on the north end of the facility that contains approximately 24 aboveground storage tanks (AST's). The integrity of the AST's and secondary containment are not determined, but signs indicate potential issues in the future. There is a large bioreactor on the northwest corner of the property that has deteriorating walls and a secondary containment approximately 1 foot above ground surface. There are no employees operating the facility nor any public access restriction. Any significant rainfall could and would cause an overflow of the retention pond, some rolloff boxes, the tank battery containment, and several on-site basins. Drainage is primarily to the north and to the west, both directly flowing into Vincent Bayou, approximately 100 feet from the property line.

1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results

Historical inspections/investigations conducted by the Harris County Public Health and Environmental Services and the Texas Commission on Environmental Quality have shown elevated levels of benzene and chlorinated solvents in some of the waste stored on-site.

Of the drums staged in the facility warehouse, a large portion are not in transportable condition. Most of the drums' contents are not consistent with the drum labels (i.e. drums with "NonHaz" labels containing flammables or corrosives). Some drums are leaking, and some are not sealed with the appropriate lids, bungs, or drum rings). Some corrosives are stored in metal drums, as well as acids and bases stored side by side.

2. Current Activities

2.1 Operations Section

2.1.1 Narrative

US Oil Recovery opened for business in May 2002 in Pasadena, Texas to handle used oil. In its proprietary plant, US Oil Recovery performed municipal and industrial wastewater pretreatment of Class I and Class II wastewater, characteristically hazardous waste, used oil and oily sludges, and municipal solid waste. The facility is located on approximately 13 acres located north of the City of Pasadena at 400 N. Richey. The MCC facility is located on approximately 5 acres located north of the City of Pasadena at 200 N. Richey with a mailing address and business office at 400 N. Richey.

2.1.2 Response Actions to Date

Response efforts continue to include both the USOR facility located at 400 N. Richey Street as well as the connected MCC (USOR#2) facility located at 200 N. Richey Street. To date, a total of 15 FRAC tanks and 4 pumps are in use to contain and maintain site contact water and leaking containment areas. Two FRAC tanks and the vacuum truck were demobilized. ERRS and START continued to collect samples for waste characterization and profiling for disposal and assessment of site runoff and containment areas. Preliminary analytical results for assessment samples collected at USOR and MCC indicated levels of BTEX, acetone, and phenol among other organic constituents. Analytical results for waste characterization of the contents in the FRAC tanks from NTF, STF, and parking lot at USOR and the Z-Tank at MCC indicated low pH levels. A generator profile was submitted to Intergulf for disposal. ERRS coordinated transport and disposal for the week of 19 July.

Drums, totes, and containers on-site continued being assessed, inventoried, and segregated to ensure all containers are stable and not staged in an unsafe manner according to contents: flammable/combustible, corrosive-acidic, corrosive-basic, and non-hazardous material/universal waste. To date a total of 409 drums have been inventoried and 143 assessed.

Of the 225 roll-off boxes staged throughout the site, 64 needed some mechanism of address to eliminate the threat of overflow and migration off site. Issues resolved include leaks, tarps with holes, missing tarps, missing or damaged pipes, and missing or damaged bows, all of which can result in an overflowing roll-off box. As of July 15, all 225 roll-off boxes are securely covered and not posing an imminent threat to human health and the environment from the rolloff boxes being rained on and overflowing.

2.1.3 Enforcement Activities, Identity of Potentially Responsible Parties (PRPs)

The Potential Responsible Parties at this time are US Oil Recovery, LLC and MCC (USOR#2), both with the same owner.

2.2 Planning Section

2.2.1 Anticipated Activities

2.2.1.1 Planned Response Activities

Continue maintenance operations on containment areas located at USOR and MCC. Continue to assess, inventory and segregate drums, totes, and containers on-site to ensure all containers are segregated correctly, stable and not staged in an unsafe manner. Continue to coordinate the transport and disposal of the accumulated and contaminated runoff and stormwater.

2.3 Logistics Section

2.4 Finance Section

2.5 Safety Officer

2.6 Liaison Officer

2.7 Information Officer

3. Participating Entities

3.1 Unified Command

3.2 Cooperating and Assisting Agencies

Cooperating and assisting agencies involved in the site are the Texas Commission on Environmental

Quality (TCEQ) and Harris County Public Health and Environmental Services (HCPHES).

4. Personnel On Site

Personnel on-site include EPA, START, and ERRS.

Additional personnel on-site at their discretion are representatives from TCEQ and HCPHES.

5. Definition of Terms

6. Additional sources of information

6.1 Internet location of additional information/reports

Additional information can be obtained from the website www.epaosc.org/USOilRecovery-Pasadena.

6.2 Reporting Schedule

Additional POLREP's will be provided as the response efforts continue.

7. Situational Reference Materials

Additional information can be obtained from the website www.epaosc.org/USOilRecovery-Pasadena.

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US Oil Recovery
Pasadena, TX - EPA Region VI
POLREP #4
Progress Report

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U.S. ENVIRONMENTAL PROTECTION AGENCY
POLLUTION/SITUATION REPORT
US Oil Recovery - Removal Polrep



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region VI

Subject: POLREP #4
Progress Report
US Oil Recovery
A6X7
Pasadena, TX
Latitude: 29.7177400 Longitude: -95.2210530

To:
From: Adam Adams, OSC
Date: 7/24/2010
Reporting Period:

1. Introduction

1.1 Background

Site Number:	A6X7	Contract Number:	
D.O. Number:		Action Memo Date:	
Response Authority:	CERCLA	Response Type:	Emergency
Response Lead:	EPA	Incident Category:	Removal Action
NPL Status:	Non NPL	Operable Unit:	
Mobilization Date:	7/1/2010	Start Date:	7/1/2010
Demob Date:		Completion Date:	
CERCLIS ID:		RCRIS ID:	
ERNS No.:		State Notification:	
FPN#:		Reimbursable Account #:	

1.1.1 Incident Category

Emergency Response/Emergency Removal Action

1.1.2 Site Description

US Oil Recovery is located on approximately 13 acres of land just north of the City of Pasadena, Texas north of Texas Highway 225. US Oil Recovery performed municipal and industrial wastewater pretreatment of Class I and Class II wastewater, characteristically hazardous waste, used oil and oily sludges, and municipal solid waste.

1.1.2.1 Location

US Oil Recovery is located at 400 N. Richey, Pasadena, Harris County, Texas 77506. US Oil Recovery has an affiliated facility called MCC (USOR#2) that is located at 200 N. Richey, Pasadena, Texas 77506.

1.1.2.2 Description of Threat

Approximately 225 roll-off boxes (most labeled "Hazardous Waste Oct 09" or "Hazardous Waste Dec 09"), approximately 600 plus drums and approximately 100 plus 300 gallon totes are located throughout the site in no particular arrangement. A number of the roll-off boxes were not properly secured (i.e. missing/damaged tarps, poles, or bows) and open to the elements. A retention pond is located on the western side of the site and contains unknown chemicals. Additionally, there is a tank battery on the north end of the facility that contains approximately 24 aboveground storage tanks (AST's). The integrity of the AST's and secondary containment are not determined, but signs indicate potential issues in the future. There is a large bioreactor on the northwest corner of the property that has deteriorating walls and a secondary containment approximately 1 foot above ground surface. There are no employees operating the facility nor any public access restriction. Any significant rainfall could and would cause an overflow of the retention pond, some rolloff boxes, the tank battery containment, and several on-site basins. Drainage is primarily to the north and to the west, both directly flowing into Vincent Bayou, approximately 100 feet from the property line.

1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results

Historical inspections/investigations conducted by the Harris County Public Health and Environmental Services and the Texas Commission on Environmental Quality have shown elevated levels of benzene and chlorinated solvents in some of the waste stored on-site.

Of the drums staged in the facility warehouse, a large portion are not in transportable condition. Most of the drums' contents are not consistent with the drum labels (i.e. drums with "NonHaz" labels containing flammables or corrosives). Some drums are leaking, and some are not sealed with the appropriate lids, bungs, or drum rings). Some corrosives are stored in metal drums, as well as acids and bases stored side by side.

The contents of the totes staged in the warehouse are not consistent with the tote labels. Most of the totes are marked with computer generated "Universal Waste" labels and contain flammables and corrosives.

2. Current Activities

2.1 Operations Section

2.1.1 Narrative

US Oil Recovery opened for business in May 2002 in Pasadena, Texas to handle used oil. In its proprietary plant, US Oil Recovery performed municipal and industrial wastewater pretreatment of Class I and Class II wastewater, characteristically hazardous waste, used oil and oily sludges, and municipal solid waste. The facility is located on approximately 13 acres located north of the City of Pasadena at 400 N. Richey. The MCC facility is located on approximately 5 acres located north of the City of Pasadena at 200 N. Richey with a mailing address and business office at 400 N. Richey.

2.1.2 Response Actions to Date

Response efforts continue to include both the USOR facility located at 400 N. Richey Street as well as the connected MCC (USOR#2) facility located at 200 N. Richey Street. During the week of 19 July, on-site security was continued at USOR and MCC. The contents in the FRAC tanks from NTF, STF, and parking lot at USOR and the Z-Tank at MCC were transported off-site to Intergulf for proper disposal. This resulted in the demobilization of 13 FRAC tanks from both sites.

Drums, totes, and containers on-site continued being assessed, inventoried, and segregated. Secondary containment areas were built to ensure all containers are stable and not staged in an unsafe manner according to contents: flammable/combustible, corrosive-acidic, corrosive-basic, and non-hazardous material/universal waste. To date a total of 765 drums have been inventoried and assessed while 132 totes have been inventoried and 53 have been assessed. Additionally a total of 26 poly drums and 23 steel drums were over-packed. Documentation of site activities continues through written and photographic means.

2.1.3 Enforcement Activities, Identity of Potentially Responsible Parties (PRPs)

The Potential Responsible Parties at this time are US Oil Recovery, LLC and MCC (USOR#2), both with the same owner.

2.2 Planning Section

2.2.1 Anticipated Activities

2.2.1.1 Planned Response Activities

Continue maintenance operations on containment areas located at USOR and MCC. Continue to assess, inventory and segregate drums, totes, and containers on-site to ensure all containers are segregated correctly, stable and not staged in an unsafe manner. Continue to coordinate the transport and disposal of the accumulated and contaminated runoff and stormwater.

2.3 Logistics Section

2.4 Finance Section

2.5 Safety Officer

2.6 Liaison Officer

2.7 Information Officer

3. Participating Entities**3.1 Unified Command****3.2 Cooperating and Assisting Agencies**

Cooperating and assisting agencies involved in the site are the Texas Commission on Environmental Quality (TCEQ) and Harris County Public Health and Environmental Services (HCPHES).

4. Personnel On Site

Personnel on-site include EPA, START, and ERRS.

Additional personnel on-site at their discretion are representatives from TCEQ and HCPHES.

5. Definition of Terms**6. Additional sources of information****6.1 Internet location of additional information/reports****6.2 Reporting Schedule****7. Situational Reference Materials**

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US Oil Recovery
Pasadena, TX - EPA Region VI
POLREP #5
Final

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U.S. ENVIRONMENTAL PROTECTION AGENCY
POLLUTION/SITUATION REPORT
US Oil Recovery - Removal Polrep



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region VI

Subject: POLREP #5
Final
US Oil Recovery
A6X7
Pasadena, TX
Latitude: 29.7177400 Longitude: -95.2210530

To:
From: Adam Adams, OSC
Date: 8/5/2010
Reporting Period: 07/01-08/02/2010

1. Introduction

1.1 Background

Site Number:	A6X7	Contract Number:	
D.O. Number:		Action Memo Date:	
Response Authority:	CERCLA	Response Type:	Emergency
Response Lead:	EPA	Incident Category:	Removal Action
NPL Status:	Non NPL	Operable Unit:	
Mobilization Date:	7/1/2010	Start Date:	7/1/2010
Demob Date:	8/2/2010	Completion Date:	8/2/2010
CERCLIS ID:		RCRIS ID:	
ERNS No.:		State Notification:	
FPN#:		Reimbursable Account #:	

1.1.1 Incident Category

Emergency Response/Emergency Removal Action

1.1.2 Site Description

US Oil Recovery is located on approximately 13 acres of land just north of the City of Pasadena, Texas north of Texas Highway 225. US Oil Recovery performed municipal and industrial wastewater pretreatment of Class I and Class II wastewater, characteristically hazardous waste, used oil and oily sludges, and municipal solid waste.

1.1.2.1 Location

US Oil Recovery is located at 400 N. Richey, Pasadena, Harris County, Texas 77506. US Oil Recovery has an affiliated facility called MCC (USOR#2) that is located at 200 N. Richey, Pasadena, Texas 77506.

1.1.2.2 Description of Threat

225 - 25 cubic yard roll-off boxes (most labeled "Hazardous Waste Oct 09" or "Hazardous Waste Dec 09"), 797 - 55 gallon drums and 212 - 300 to 400 gallon totes are located throughout the site in no particular arrangement. A number of the roll-off boxes were not properly secured (i.e. missing/damaged tarps, poles, or bows) and open to the elements. A retention pond is located on the western side of the site and contains unknown chemicals. Additionally, there is a tank battery on the north end of the facility that contains approximately 24 aboveground storage tanks (AST's). The integrity of the AST's and secondary containments are not determined, but signs indicate potential issues in the future. There is a large bioreactor on the northwest corner of the property that has deteriorating walls and a secondary containment approximately 1 foot above ground surface. There were no employees operating the facility nor any public access restriction at the time of the response. Prior to any response efforts, any significant rainfall could and would cause an overflow of the retention pond, some rolloff boxes, the tank battery containments, and several on-site basins. Drainage is primarily to the north and to the west, both directly flowing into Vincent Bayou, approximately 100 feet from the property line.

1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results

Historical inspections/investigations conducted by the Harris County Public Health and Environmental Services and the Texas Commission on Environmental Quality have shown elevated levels of benzene and chlorinated solvents in some of the waste stored on-site.

Of the drums staged in the facility warehouse, a large portion are not in transportable condition. Most of the drums' contents were not consistent with the drum labels (i.e. drums with "NonHaz" labels containing flammables or corrosives). Some drums were leaking, and some were not sealed with the appropriate lids, bungs, or drum rings). Some corrosives were stored in metal drums, as well as acids and bases stored side by side.

The contents of the totes staged in the warehouse were not consistent with the tote labels. Most of the totes were marked with computer generated "Universal Waste" labels and contain flammables and corrosives.

2. Current Activities

2.1 Operations Section

2.1.1 Narrative

US Oil Recovery opened for business in May 2002 in Pasadena, Texas to handle used oil. In its proprietary plant, US Oil Recovery performed municipal and industrial wastewater pretreatment of Class I and Class II wastewater, characteristically hazardous waste, used oil and oily sludges, and municipal solid waste. The facility is located on approximately 13 acres located north of the City of Pasadena at 400 N. Richey. The MCC facility is located on approximately 5 acres located north of the City of Pasadena at 200 N. Richey with a mailing address and business office at 400 N. Richey.

2.1.2 Response Actions to Date

During the week of 26 July, site stabilization efforts continued to include both the USOR facility as well as the connected MCC (USOR#2) facility with on-site security continued at both sites. The contents in the secondary containment of the basic and acidic tanks were pumped into separate truck bays due to acute structural damage of the secondary containment walls. Neutralization of the corrosives from the two secondary containments, from the filter press area, and FRAC tank A-1331 was conducted for disposal. The remaining 40,000 gallons of neutralized non-hazardous material were transported off-site to Intergulf for disposal on 29 and 30 July.

The remaining drums and totes located on-site were assessed, inventoried, segregated, and staged in secondary containment areas located in the warehouse to ensure the containers were stable and not staged in an unsafe manner. Placards and paint markings were placed at each containment area according to drum and tote content field hazardous characterization analyses: red-flammable/combustible, white-corrosive/acidic, yellow-corrosive/basic, and green-non-hazardous material/universal waste.

The field hazard characterization analyses were conducted to ascertain the characteristic hazards of the containers (i.e. flammability, corrosivity) for appropriate storage and compatibility; however, the field hazard characterization analyses were not conducted to determine the presence or absence of hazardous compounds. The drums and totes marked with the green paint and are located in the placarded "Non-hazardous material" staging areas should not be assumed to be free of hazardous compounds, but should be assessed in more detail prior to disposal.

The containment areas were set up accordingly:

Containment A = Hazardous-Flammable/Combustible
Containment B = Non-Hazardous Material/Universal Waste
Containment C-1 = Hazardous-Flammable/Combustible
Containment C-2 = Non-Hazardous Material/Universal Waste
Containment D-1 = Empty Drums
Containment D-2 = Hazardous-Flammable/Combustible
Containment E-1 = Hazardous-Corrosive/Acidic
Containment E-2 = Non-Hazardous Material/Universal Waste
Containment E-3 = Hazardous-Corrosive/Acidic
Containment F-1 = Hazardous-Corrosive/Basic
Containment F-2 = Non-Hazardous Material/Universal Waste
High Hazard Containment A = Potential Oxidizers
High Hazard Containment B = H₂S

Tote Staging Area = Each row of totes is separated into one of the four designated classifications (Hazardous-Flammable/Combustible, Non-Hazardous Material/Universal Waste, Hazardous-Corrosive/Acidic, and Hazardous-Corrosive/Basic). No rows of incompatibles are staged next to each other.

The site was stabilized on 31 July and final written and photographic documentation of the site was conducted. During the response, a total of 225 roll-off boxes were secured; 797 drums and 212 totes were assessed, inventoried and segregated; and 392,000 gallons of non-hazardous material were transported off-site for proper disposal.

Demobilization of personnel and equipment was completed on August 2.

2.1.3 Enforcement Activities, Identity of Potentially Responsible Parties (PRPs)

The Potential Responsible Parties at this time are US Oil Recovery, LLC and MCC (USOR#2), both with the same owner.

2.2 Planning Section

2.2.1 Anticipated Activities

No additional EPA response activities are planned at this time.

2.3 Logistics Section

2.4 Finance Section

2.5 Safety Officer

2.6 Liaison Officer

2.7 Information Officer

3. Participating Entities

3.1 Unified Command

3.2 Cooperating and Assisting Agencies

Cooperating and assisting agencies involved in the site are the Texas Commission on Environmental Quality (TCEQ) and Harris County Public Health and Environmental Services (HCPHES).

4. Personnel On Site

Personnel on-site include EPA, START, and ERRS.

Additional personnel on-site at their discretion are representatives from TCEQ and HCPHES.

5. Definition of Terms

6. Additional sources of information

6.1 Internet location of additional information/reports

Additional information can be obtained at www.epaosc.org/usoilrecovery-pasadena.

6.2 Reporting Schedule

7. Situational Reference Materials

Additional information can be obtained at www.epaosc.org/usoilrecovery-pasadena.

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US Oil Recovery
Pasadena, TX - EPA Region VI
POLREP #6
Initial Report- Incident 2

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U.S. ENVIRONMENTAL PROTECTION AGENCY
POLLUTION/SITUATION REPORT
US Oil Recovery - Removal Polrep



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region VI

Subject: POLREP #6
Initial Report- Incident 2
US Oil Recovery
A6X7
Pasadena, TX
Latitude: 29.7177400 Longitude: -95.2210530

To:
From: Adam Adams, OSC
Date: 11/12/2010
Reporting Period: 11/08/2010 - 11/12/2010

1. Introduction

1.1 Background

Site Number:	A6X7	Contract Number:	
D.O. Number:		Action Memo Date:	
Response Authority:	CERCLA	Response Type:	Emergency
Response Lead:	EPA	Incident Category:	Removal Action
NPL Status:	Non NPL	Operable Unit:	
Mobilization Date:	11/8/2010	Start Date:	11/8/2010
Demob Date:		Completion Date:	
CERCLIS ID:		RCRIS ID:	
ERNS No.:		State Notification:	
FPN#:		Reimbursable Account #:	

1.1.1 Incident Category

Emergency Response/Emergency Removal Action

1.1.2 Site Description

US Oil Recovery is located on approximately 13 acres of land just north of the City of Pasadena, Texas north of Texas Highway 225. US Oil Recovery performed municipal and industrial wastewater pretreatment of Class I and Class II wastewater, characteristically hazardous waste, used oil and oily sludges, and municipal solid waste.

1.1.2.1 Location

US Oil Recovery is located at 400 N. Richey, Pasadena, Harris County, Texas 77506.

1.1.2.2 Description of Threat

This and future POLREP's document a separate incident from the response conducted in July 2010.

HCPHES notified the National Response Center (NRC Report No.959001) to report a release of an unknown waste water from an unknown source at the facility impacting Vince Bayou, approximately 100 feet from the property line. Drainage is primarily to the north and to the west, both directly flowing into Vince Bayou. The NRC report also stated there are various hazardous chemicals at the facility. NRC notified the EPA. Upon notification, EPA contacted the local TCEQ representative for confirmation. The TCEQ monitored the facility over the weekend and requested EPA assistance on November 8, 2010. The EPA OSC mobilized to the site and re-activated START-3 and ERRS contractors to be on site on 11/09/2010.

1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results

Due to heavy rains in the area, available freeboard located in the containment areas had

become compromised and the contents were overflowing. Initial assessment included the north and south containment areas, truck bay areas, and the retention pond. Several corrosive caustic drums and totes in the warehouse were leaking contents thereby creating a safety concern.

2. Current Activities

2.1 Operations Section

2.1.1 Narrative

US Oil Recovery opened for business in May 2002 in Pasadena, Texas to handle used oil. In its proprietary plant, US Oil Recovery performed municipal and industrial wastewater pretreatment of Class I and Class II wastewater, characteristically hazardous waste, used oil and oily sludges, and municipal solid waste. The facility is located on approximately 13 acres located north of the City of Pasadena at 400 N. Richey.

2.1.2 Response Actions to Date

On 04 November 2010, HCPHES notified the NRC (NRC#959001) of a release of waste water from an unknown source at the facility that was threatening Vince Bayou. Upon notification by the NRC and request from TCEQ, EPA activated START-3 and ERRS contractors on 11/08/10 to respond to the incident.

During this reporting period ERRS used trash-pumps to control liquid runoff off-site, field tested pH of non-hazardous liquids and began transportation of non-hazardous liquid waste off-site for disposal. Crews commenced with neutralization of on-site corrosive liquids overflowing from secondary containments. Drums and totes located in the warehouse were assessed for stability, leaking containers were secured and spilled contents were recovered.

2.1.3 Enforcement Activities, Identity of Potentially Responsible Parties (PRPs)

The Potential Responsible Party at this time is US Oil Recovery, LLC.

2.2 Planning Section

2.2.1 Anticipated Activities

EPA, START-3 and ERRS will continue to stabilize on-site containers and recover liquids currently contained in the secondary containment of the on-site above ground storage tanks. The liquid recovered from the secondary containments will continue to be transported off-site by vacuum trailer to the Intergulf recycling facility in Pasadena, TX for fuels blending. Strong corrosive liquids and sludge will continue to be treated with caustic material to raise the pH.

2.3 Logistics Section

2.4 Finance Section

2.5 Safety Officer

2.6 Liaison Officer

2.7 Information Officer

3. Participating Entities

3.1 Unified Command

3.2 Cooperating and Assisting Agencies

Texas Commission on Environmental Quality (TCEQ) and Harris County Public Health and Environmental Services (HCPHES).

4. Personnel On Site

Personnel on-site include EPA, START-3, and ERRS.

Additional personnel on-site at their discretion are representatives from TCEQ and HCPHES.

5. Definition of Terms

6. Additional sources of information

6.1 Internet location of additional information/reports

Additional information can be obtained at www.epaosc.org/usoilrecovery-pasadena.

6.2 Reporting Schedule

7. Situational Reference Materials

Additional information can be obtained at www.epaosc.org/usoilrecovery-pasadena.


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US Oil Recovery
Pasadena, TX - EPA Region VI
POLREP #7
Progress Report - Incident #2

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U.S. ENVIRONMENTAL PROTECTION AGENCY
POLLUTION/SITUATION REPORT
US Oil Recovery - Removal Polrep



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region VI

Subject: POLREP #7
Progress Report - Incident #2
US Oil Recovery
A6X7
Pasadena, TX
Latitude: 29.7177400 Longitude: -95.2210530

To:
From: Adam Adams, OSC
Date: 11/18/2010
Reporting Period: 11/13/2010 - 11/24/2010

1. Introduction

1.1 Background

Site Number:	A6X7	Contract Number:	
D.O. Number:		Action Memo Date:	
Response Authority:	CERCLA	Response Type:	Emergency
Response Lead:	EPA	Incident Category:	Removal Action
NPL Status:	Non NPL	Operable Unit:	
Mobilization Date:	11/8/2010	Start Date:	11/9/2010
Demob Date:		Completion Date:	
CERCLIS ID:		RCRIS ID:	
ERNS No.:		State Notification:	
FPN#:		Reimbursable Account #:	

1.1.1 Incident Category

Emergency Response/Emergency Removal Action

1.1.2 Site Description

US Oil Recovery is located on approximately 13 acres of land just north of the City of Pasadena, Texas north of Texas Highway 225. US Oil Recovery performed municipal and industrial wastewater pretreatment of Class I and Class II wastewater, characteristically hazardous waste, used oil and oily sludges, and municipal solid waste.

1.1.2.1 Location

US Oil Recovery is located at 400 N. Richey, Pasadena, Harris County, Texas 77506.

1.1.2.2 Description of Threat

Separate incident from the response conducted in July 2010. HCPHES notified the National Response Center (NRC Report No.959001) to report a release of waste water from an unknown source at the facility. Drainage is primarily to the north and to the west, both directly flowing into Vince Bayou, approximately 100 feet from the property line. NRC notified the EPA. Upon notification an EPA OSC and START-3 mobilized to the site to conduct a Tier 1 response on 11/08/2010.

Materials at the facility include solids, liquids, and sludges with hazardous characteristics that include flammables and corrosives. Assessment sampling from the July incident also indicated acetone, benzene, toluene, ethyl benzene, and xylene in some of the facility containments. The north and south tank farm secondary containments and several sumps and bays at the facility have historically overflowed directly into the parking lot, which overflows directly into Vince Bayou.

1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results

Due to heavy rains in the area, available freeboard located in the containment areas had become compromised and the contents were overflowing into the parking lot. Initial assessment included the north and south tank farm secondary containment areas, sumps, bays, and a retention pond. Some characteristically hazardous drums and totes in the warehouse were leaking contents, thereby creating an additional safety concern.

2. Current Activities

2.1 Operations Section

2.1.1 Narrative

US Oil Recovery opened for business in May 2002 in Pasadena, Texas to handle used oil. In its proprietary plant, US Oil Recovery performed municipal and industrial wastewater pretreatment of Class I and Class II wastewater, characteristically hazardous waste, used oil and oily sludges, and municipal solid waste. The facility is located on approximately 13 acres located north of the City of Pasadena at 400 N. Richey.

2.1.2 Response Actions to Date

During this operational period, the EPA and their contractors continued emergency removal actions at the US Oil Recovery facility located at 400 North Richey, Pasadena, TX. EPA Emergency and Rapid Response Service (ERRS) personnel continued recovery of liquids from the north and south tank farms. Hydrogen sulfide was found to be present at significant levels in the liquids recovered from the above ground storage tanks.

EPA and START collected three waste samples from the sludge. One sample was collected from the north tank farm secondary containment; one sample was collected from the south tank farm secondary containment; and one sample was collected from the acidic sludge contained in three sumps. Analytical data reported will be used to implement the most cost effective method for disposal.

ERRS removed the acidic sludge from the three sumps (34, 35, and 36) and temporarily stored the material securely at the facility pending disposal approvals.

At the end of this operational period, approximately 340,000 gallons of non-hazardous oily liquid waste has been transported off-site for fuels blending / recycling at the Intergulf disposal facility in Pasadena, TX. This material was from the above ground storage tanks; north and south secondary containments; sumps 34, 35, and 36; the parking lot; and bays 45 and 48.

Additional measures taken during this reporting period include securing the site and implementing engineering controls to prevent access to sumps 34, 35, and 36 during the Thanksgiving break.

2.1.3 Enforcement Activities, Identity of Potentially Responsible Parties (PRPs)

The Potential Responsible Party at this time is US Oil Recovery, LLC.

2.2 Planning Section

2.2.1 Anticipated Activities

EPA, START-3 and ERRS will continue after the Thanksgiving break to further stabilize the facility. This will include disposal of hazardous and non-hazardous sludges from the containments, disposal / recycling of recovered oily liquids from the containments, container re-address, and site security.

2.3 Logistics Section

2.4 Finance Section

2.5 Safety Officer

No incidents or injuries occurred during or prior to this operational period on this response.

Hydrogen sulfide was found at significant levels in the north tank farm during the recovery operation. Additional Hydrogen sulfide personal dosimeters were utilized to further protect site personnel.

2.6 Liaison Officer

2.7 Information Officer

Additional information can be obtained at www.epaosc.org/usoilrecovery-pasadena.

3. Participating Entities

3.1 Unified Command

3.2 Cooperating and Assisting Agencies

Texas Commission on Environmental Quality (TCEQ).

Harris County Public Health and Environmental Services (HCPHES).

4. Personnel On Site

Personnel on-site include EPA, START-3, and ERRS.

Additional personnel on-site at their discretion are representatives from TCEQ and HCPHES.

5. Definition of Terms


6. Additional sources of information**6.1 Internet location of additional information/reports**

Additional information can be obtained at www.epaosc.org/usoilrecovery-pasadena.

6.2 Reporting Schedule**7. Situational Reference Materials**

Additional information can be obtained at www.epaosc.org/usoilrecovery-pasadena.

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US Oil Recovery Pasadena, TX - EPA Region VI POLREP #8 Final Report - Incident #2			
U.S. ENVIRONMENTAL PROTECTION AGENCY POLLUTION/SITUATION REPORT US Oil Recovery - Removal Polrep			
			
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY Region VI			
Subject:	POLREP #8 Final Report - Incident #2 US Oil Recovery A6X7 Pasadena, TX Latitude: 29.7177400 Longitude: -95.2210530		
To:	Dana Tulis, U.S. EPA HQ Ragan Broyles, Superfund Division Jeff Lewellin, TCEQ		
From:	Adam Adams, OSC		
Date:	1/27/2011		
Reporting Period:	11/29/2010 - 01/07/2011		
1. Introduction			
1.1 Background			
Site Number:	A6X7	Contract Number:	
D.O. Number:		Action Memo Date:	
Response Authority:	CERCLA	Response Type:	Emergency
Response Lead:	EPA	Incident Category:	Removal Action
NPL Status:	Non NPL	Operable Unit:	
Mobilization Date:	11/8/2010	Start Date:	11/9/2010
Demob Date:	12/20/2010	Completion Date:	1/7/2011
CERCLIS ID:	TXR000051540 (USOR facility)	RCRIS ID:	
ERNS No.:		State Notification:	
FPN#:		Reimbursable Account #:	
1.1.1 Incident Category			
Emergency Response/Emergency Removal Action			
1.1.2 Site Description			
US Oil Recovery is located on approximately 13 acres of land just north of the City of Pasadena, Texas north of Texas Highway 225. US Oil Recovery performed municipal and industrial wastewater pretreatment of Class I and Class II wastewater, characteristically hazardous waste, used oil and oily sludges, and municipal solid waste.			
1.1.2.1 Location			
US Oil Recovery is located at 400 N. Richey, Pasadena, Harris County, Texas 77506.			
1.1.2.2 Description of Threat			
Separate incident from the response conducted in July 2010. HCPHES notified the National Response Center (NRC Report No.959001) to report a release of waste water from an unknown source at the facility. Drainage is primarily to the north and to the west, both directly flowing into Vince Bayou, approximately 100 feet from the property line. NRC notified the EPA. Upon notification an EPA OSC and START-3 mobilized to the site to conduct a Tier 1 response on 11/08/2010.			

Materials at the facility include solids, liquids, and sludges with hazardous characteristics that include flammables and corrosives. Assessment sampling from the July incident also indicated acetone, benzene, toluene, ethyl benzene, and xylene in some of the facility containments. The north and south tank farm secondary containments and several sumps and bays at the facility have historically overflowed directly into the parking lot, which overflows directly into Vince Bayou.

1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results

Due to heavy rains in the area, available freeboard located in the containment areas had become compromised and the contents were overflowing into the parking lot. Initial assessment included the north and south tank farm secondary containment areas, sumps, bays, and a retention pond. Some characteristically hazardous drums and totes in the warehouse were leaking contents, thereby creating an additional safety concern.

2. Current Activities

2.1 Operations Section

2.1.1 Narrative

US Oil Recovery opened for business in May 2002 in Pasadena, Texas to handle used oil. In its proprietary plant, US Oil Recovery performed municipal and industrial wastewater pretreatment of Class I and Class II wastewater, characteristically hazardous waste, used oil and oily sludges, and municipal solid waste. The facility is located on approximately 13 acres located north of the City of Pasadena at 400 N. Richey.

2.1.2 Response Actions to Date

During this operational period the EPA and their contractors continued emergency removal actions at the US Oil Recovery facility located at 400 North Richey, Pasadena, TX. EPA Emergency and Rapid Response Service (ERRS) personnel transferred the free phase oily liquid waste from Hydrogen Sulfide contaminated on-site above ground storage tanks in the north tank farm to the secondary containment prior to transport for fuel blending/disposal at the Intergulf facility. Free phase acidic oily liquids and sludges were also recovered from the secondary containments and loading dock bays and either neutralized prior to transport and disposal at Waste Management in Conroe, TX and US Ecology in Robstown, TX or stored in temporary on-site storage. Additional site stabilization actions included containment spray wash where needed, utilizing concrete to seal the secondary containment for T-40, and the management of the drums and totes inside the warehouse for continued segregation. Following demobilization of equipment from the site on 12/20/2010, the site was secured.

Additionally, during this operational period, the EPA and their contractors mobilized to the MCC Recycling facility located at 200 Richey, Pasadena, TX following notification by the TCEQ of an active release from the northwest corner of the chlorine contact tank (Z-tank) into Vince Bayou. EPA ERRS personnel recovered approximately 50,000 gallons of oily liquid from the Z-tank prior to transport for disposal at the Intergulf facility. Upon assessment of the containment wall located at the northwest corner of the Z-tank where the release occurred, ERRS plugged the area to stabilize the containment wall. Following stabilization, the site was secured and personnel and equipment demobilized.

During this response effort, approximately 410,000 gallons of oily liquid were recovered from the above ground storage tanks; north and south secondary containments; sumps 34, 35, and 36; the parking lot; bays 45 and 48; and the Z-tank (NRC 959001).

Waste Stream	Disposal Facility	Incident Occurrence	Volume/Weight
Hazardous Sludge (Benzene)	US Ecology; Robstown, TX	Incident 2	11,751 gallons
Hazardous Sludge Washout (Benzene)	US Ecology; Robstown, TX	Incident 2	5 drums
Nonhazardous Sludge	Waste Management; Conroe, TX	Incident 2	89.36 tons
PPE/Solids/IDW	Waste Management; Conroe, TX	Incident 2	10 cubic yards
Nonhazardous liquids	Intergulf; Pasadena, TX	Incident 2	410,000 gallons

2.1.3 Enforcement Activities, Identity of Potentially Responsible Parties (PRPs)

The Potential Responsible Party at this time is US Oil Recovery, LLC.

2.2 Planning Section

2.2.1 Anticipated Activities

2.3 Logistics Section

2.4 Finance Section

2.5 Safety Officer

No incidents or injuries occurred during or prior to this operational period on this response.

Hydrogen sulfide was found at significant levels in the north tank farm during the recovery operation. Additional Hydrogen sulfide personal dosimeters were utilized to further protect site personnel.

2.6 Liaison Officer**2.7 Information Officer**

Additional information can be obtained at www.epaosc.org/usoilrecovery-pasadena.

3. Participating Entities**3.1 Unified Command****3.2 Cooperating and Assisting Agencies**

Texas Commission on Environmental Quality (TCEQ).

Harris County Public Health and Environmental Services (HCPHES).

4. Personnel On Site

Personnel on-site include EPA, START-3, and ERRS.

Additional personnel on-site, at their discretion are representatives from TCEQ and HCPHES.

5. Definition of Terms**6. Additional sources of information****6.1 Internet location of additional information/reports**

Additional information can be obtained at www.epaosc.org/usoilrecovery-pasadena.

6.2 Reporting Schedule**7. Situational Reference Materials**

Additional information can be obtained at www.epaosc.org/usoilrecovery-pasadena.

[Click here to view Attached Images](#)

[web sites](#) | [regional web sites](#) | [profile](#) | [bulletins](#) | [images](#) | [documents](#) | [PolSitreps](#) | [contacts](#) | [links](#)

Questions or Comments?

ERT Software Support: 800-999-6990 - Email: ERTSupport@epa.gov
[Security and Privacy Policy](#)

Reference 13:

Texas Natural Resource Conservation Commission. Domestic Administrative Report 1.0.
March 2002. 16 pages.

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Provide a brief description as to the need for a co-permittee.

c. Individual information (complete only if the facility owner or co-permittee is an individual)

Name: _____ Check one: _____ Male _____ Female

State Identification Number: _____

Date of Birth: _____

Assumed business or professional name: _____

Home address:

Street No. _____ Street name: _____ Street type _____

City: _____ State: _____ Zip code: _____

Telephone number: _____

Business name: _____

Check one: _____ The TNRCC has issued this Customer Reference Number to the owner: CN _____

_____ The owner has not yet received a Customer Reference Number. A complete Core Data Form (TNRCC-10400) listing the owner as the customer and this facility as the regulated entity is attached to this application.

2. CONTACT INFORMATION (Instructions, Page 14)

Name: Richard Neely Telephone number: 713-477-5856

Company: Severn Trent Svcs. Fax number: 713-475-0501

Street No. 3512 Street name: Pasadena Freeway Street type: Freeway

P.O. Box: N/A

City: Pasadena State: TX Zip code: 77503

Check one or both: XX Administrative contact XX Technical contact

Name: N/A Telephone number: _____

Company: _____ Fax number: _____

Street No. _____ Street name: _____ Street type: _____

P.O. Box: _____

City: _____ State: _____ Zip code: _____

Check one or both: _____ Administrative contact _____ Technical contact

3. NOTICE INFORMATION (Instructions, Page 14-15)

a. Individual publishing the notices

Name: Lynn Summers Telephone number: 713-477-1511

Company: City of Pasadena, TX Fax number: N/A

Street No. _____ Street name: _____ Street type: _____

P.O. Box: 672

City: Pasadena State: TX Zip code: 77501

b. Indicate by a check mark the method for receiving Notice of Receipt and Intent to Obtain a Water Quality Permit Package and Instructions.

_____ E-mail: E-mail address: _____
_____ Fax: Fax number: _____
_____ Overnight/Priority mail: (self addressed, prepaid envelope required)
XX _____ Regular Mail: Street No. _____ Street name: _____
_____ Street type: _____ P.O. Box: 672
_____ City: Pasadena State: TX Zip code: 77501

c. Contact in the notice

Name: Richard Neely Telephone number: 713-477-5856
Company: Severn Trent Svcs. Fax number: 713-475-0501
Street No. 3512 Street name: Pasadena Freeway Street type: Freeway
P.O. Box: _____
City: Pasadena State: TX Zip code: 77503

d. Public place information

Location of public building: City of Pasadena, TX
Public building name: City Hall
Name: Sara Metzger Telephone number: 713-477-1511
Company: City of Pasadena Fax number: 713-475-7833
Street No. 1211 Street name: Southmore Street type: Ave.
City: Pasadena State: TX Zip code: 77502

4. FACILITY INFORMATION (Instructions, Pages 15-16)

a. State/TPDES Permit No. WQ0010053-005 Expiration date: 9/1/02
EPA Identification No. TX0063410

Check one: _____ The TNRCC has issued this Regulated Entity Reference Number to the owner: RN _____
XX _____ No Regulated Entity Reference Number has been received for this facility. One or more completed Core Data Forms (TNRCC-10400) listing this facility as the regulated entity are attached.

b. Plant Name: Vince Bayou WWTP
County in which the facility is located: Harris
County in which the outfall is located: Harris

c. Owner of treatment plant: City of Pasadena

d. Owner of land where treatment plant is/will be: City of Pasadena, TX

If not the same as the facility owner, there must be a long term lease agreement in effect for at least six years. In some cases, a lease may not suffice - see instructions

Street No. _____ Street name: _____ Street type: _____

City: Pasadena P.O. Box: 672 State: TX Zip code: 77501

e. Owner of effluent disposal site: N/A

If not the same as the facility owner, there must be a long term lease agreement in effect for at least six years

Street No. _____ Street name: _____ Street type: _____

City: _____ P.O. Box: _____ State: _____ Zip code: _____

f. Owner of sewage sludge disposal site: N/A

Only required if authorization is being sought in the permit for sludge disposal on property owned/controlled by the applicant

Street No. _____ Street name: _____ Street type: _____

City: _____ P.O. Box: _____ State: _____ Zip code: _____

5. LOCATION INFORMATION (Instructions, Pages 16-18)

a. Is the location of the facility used in the existing permit correct? XX Yes ____ No

If no, or a new permit application, please give an accurate description.

b. Is the point of discharge and discharge route in the existing permit correct? XX Yes ____ No

If no, or a new or amendment permit application, please give an accurate description.

c. If a TLAP, is the location of the effluent disposal in the existing permit accurate? ____ Yes ____ No

If no, or a new or amendment permit application, please give an accurate description.

N/A

d. If a TLAP, describe the routing of effluent from the treatment facility to the effluent disposal site.

N/A

e. For TLAP applications, please identify the nearest watercourse to the disposal site to which rainfall runoff might flow if not contained. N/A

f. Is the location of the sewage sludge disposal site in the existing permit accurate?

 Yes No

If no, or a new permit application, please give an accurate description.

N/A

g. Provide a USGS Map with all required information. Indicate by a check mark that the information is provided. *Attachment B*

XX Applicant's property boundary

XX Treatment plant boundaries

XX Point of discharge and highlighted discharge route

 Sewage sludge disposal site

 Effluent disposal site boundaries

 New and future construction

XX All ponds

XX 1 mile radius and 1 mile downstream information

h. Provide the latitude and longitude of the outfall(s).

Outfall: Latitude: 29 Degrees 42 Minutes 5 Seconds

Longitude: 95 Degrees 13 Minutes 18 Seconds

i. Is the facility located in Bexar, Comal, Hays, Kinney, Medina, Travis, Uvalde, or Williamson County?

 Yes XX No If yes, additional information concerning protection of the Edwards Aquifer may be required.

j. Ownership of Facility: XX Public Private Both Federal

k. Is/will the treated wastewater discharge to a city, county, or state highway right-of-way, or a flood control district drainage ditch? Yes XX No

If yes, indicate by a check mark if: Authorization granted Authorization pending

For new and amendments, provide copies of letters that show proof of contact and the approval letter upon receipt.

l. Is the facility located on or does the treated effluent cross Indian Land? Yes XX No

6. MISCELLANEOUS INFORMATION (Instructions, Pages 18)

a. Provide two names of individuals that can be contacted during the permit term.

Name: John Manlove, Mayor Telephone number: 713-477-1511
Company: City of Pasadena, TX Fax number: N/A
Street No. _____ Street name: _____ Street type: _____
P.O. Box: 672
City: Pasadena State: TX Zip code: 77501

Name: Erwin Burden Telephone number: 713-477-1511
Company: City of Pasadena, TX Fax number: N/A
Street No. _____ Street name: _____ Street type: _____
P.O. Box: 672
City: Pasadena State: TX Zip code: 77501

b. List each person formerly employed by the TNRCC who represented your company and was paid for service regarding the application. N/A

c. For all applications involving an average daily discharge of 5 million gallons per day or more, provide the names of all counties located within 100 statute miles downstream of the point(s) of discharge.

Harris, Chambers, Galveston

d. Please provide the address for receiving self-reporting/DMR forms.

Company: City of Pasadena, TX Department: Public Works

Name: Erwin Burden, Acting Director of Public Works

Street No. _____ Street Name: _____ Street Type: _____

P.O. Box: 672

City: Pasadena State: TX Zip code: 77501

Please provide the address for receiving Annual Billing Invoices.

Company: City of Pasadena, TX Department: Public Works

Name: Erwin Burden, Acting Director of Public Works

Street No. _____ Street Name: _____ Street Type: _____

P.O. Box: 672

City: Pasadena State: TX Zip code: 77501

7. SIGNATURE PAGE (Instructions, Page 19)

I, John Manlove

Mayor

Typed or printed name

Title

certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for known violations.

Signature: John Manlove Date: August 5, 2002

Subscribed and Sworn to before me by the said John Manlove on this
5th day of August, 20 02

My commission expires on the 8th day of November, 20 02

Dinda Rorick
Notary Public

Harris
County, Texas



NOTE: If co-permittees are necessary, both entities must submit separate Signature Pages.

TNRCC USE ONLY:

Application type: _____ Renewal _____ Major Amendment _____ Minor Amendment _____ New
County: _____ Admin Complete Date: _____
Agency Receiving SPIF: _____ Texas Historical Commission _____ U.S. Fish and Wildlife
_____ Texas Parks and Wildlife _____ Army Corps of Engineers

8. SUPPLEMENTAL PERMIT INFORMATION FORM (SPIF) (Instructions, Page 19)

This form applies to TPDES permit applications only. The SPIF must be completed as a separate document. The TNRCC will mail a copy of the SPIF to each agency as required by the TNRCC agreement with EPA. If any of the items are not completely addressed and/or further information is needed, you will be contacted to provide the information before the permit is issued. Each item must be completely addressed. DO NOT REFER TO A RESPONSE OF ANY ITEM IN THE PERMIT APPLICATION FORM. Each attachment must be provided with this form, separately from the administrative report of the application. The application will not be declared administratively complete without this form being completed in its entirety including all attachments

The following applies to all applications:

1. Permittee: City of Pasadena, TX - Vince Bayou WWTP
2. Permit No. WQ0010053-005 (EPA ID No.) TX 0063410
3. Address of the project (location description that includes street/highway, city/vicinity, county):
213 McDonald St., Pasadena, TX 77506, Harris County
4. Provide the name, address, telephone and fax number of an individual that can be contacted to answer specific questions about the property.
Name: Richard Neely Telephone number: 713-477-5856
Company: Severn Trent Svcs. Fax number: 713-475-0501
Street No. 3512 Street name: Pasadena Freeway Street type: Freeway
City: Pasadena, State: TX Zip code: 77503
5. List the county in which the facility is located. Harris
6. If the property is publicly owned and the owner is different than the permittee/applicant, please identify the owner of the property. N/A
7. Identify the name of the water body (receiving waters) or TNRCC segment number that will receive the discharge. Segment No. 1007 of the San Jacinto River basin.

8. Please provide a separate 7.5 minute USGS quadrangle map with the project boundaries plotted and a general location map showing the project area. (This map is required in addition to the map in the administrative report) *Attachment C*

9. Please provide original photographs of any structures 50 years or older on the property.

10. Does your project involve any of the following? If yes, circle the appropriate letter.

- a. Proposed access roads, utility lines, construction easements
- b. Visual effects that could damage or detract from a historic property's integrity
- c. Vibration effects during construction, or as a result of project design
- d. Additional phases of development that are planned for the future
- e. Sealing caves, fractures, sinkholes, other karst features
- f. Disturbance of vegetation or wetlands

11. List proposed construction impact (surface acres to be impacted, depth of excavation, sealing of caves or other karst features).

No new construction

12. Describe existing disturbances, vegetation & land use. Land is used for a 60 year
old wastewater treatment plant.

The following applies only to applications for New TPDES permits and Major Amendments to TPDES Permits

13. List construction dates of any buildings or structures on the property. N/A

14. Provide a brief history of the property, and name of the architect/builder, if known. N/A

DOMESTIC ADMINISTRATIVE REPORT 1.1

THE FOLLOWING IS REQUIRED FOR NEW AND AMENDMENT APPLICATIONS

1. AFFECTED LANDOWNER INFORMATION (Instructions, Pages 20-22)

a. Indicate by a check mark that the landowners map or drawing, with scale, includes the following, as applicable.

- ☐ The applicant's property boundaries
- ☐ The plant site boundaries within the applicant's property boundaries
- ☐ The distance the buffer zone falls into adjacent properties and the property boundaries of the landowners located within the buffer zone
- ☐ The property boundaries of all landowners surrounding the applicant's property
- ☐ The point(s) of discharge and highlighted discharge route clearly shown for one mile downstream
- ☐ The boundaries of the effluent disposal site, all evaporation/holding ponds within the applicant's property
- ☐ The property boundaries of all landowners surrounding the applicant's property boundaries where the effluent disposal site is located
- ☐ The boundaries of the sludge use/disposal/incineration site and the property boundaries of landowners surrounding the applicant's property boundaries where the sewage sludge beneficial site is located
- ☐ The property boundaries of landowners within 1/2 mile in all directions from the applicant's property boundaries where the sewage sludge disposal site and/or incineration site are located

b. Indicate by a check mark which format the landowners list is submitted: ☐ Disk ☐ 4 sets of labels

c. Indicate by a check mark that the list of landowners is cross-referenced to the landowners map. Provide the source of the landowners' names and mailing addresses. _____

d. As required by Texas Water Code 5.115, is any permanent school fund land affected by this application?

☐ Yes ☐ No

If yes, provide the location and foreseeable impacts and effects this application has on the land(s).

2. BUFFER ZONE MAP (Instructions, Pages 21-23)

a. Provide a buffer zone map. Indicate by a check mark that all the following information is included on the map.

- | | |
|--|---|
| <input type="checkbox"/> The applicant's property boundary | <input type="checkbox"/> The required buffer zone |
| <input type="checkbox"/> Each treatment unit | <input type="checkbox"/> The distance from each treatment unit to the property boundaries |

b. How will the buffer zone requirement be met?

☐ Ownership ☐ Restrictive easement ☐ Nuisance odor control ☐ Variance

c. Does the facility comply with unsuitable site characteristics found in 30 TAC 309.13(a) through (d)?

☐ Yes ☐ No

3. ORIGINAL PHOTOGRAPHS (Instructions, Page 23)

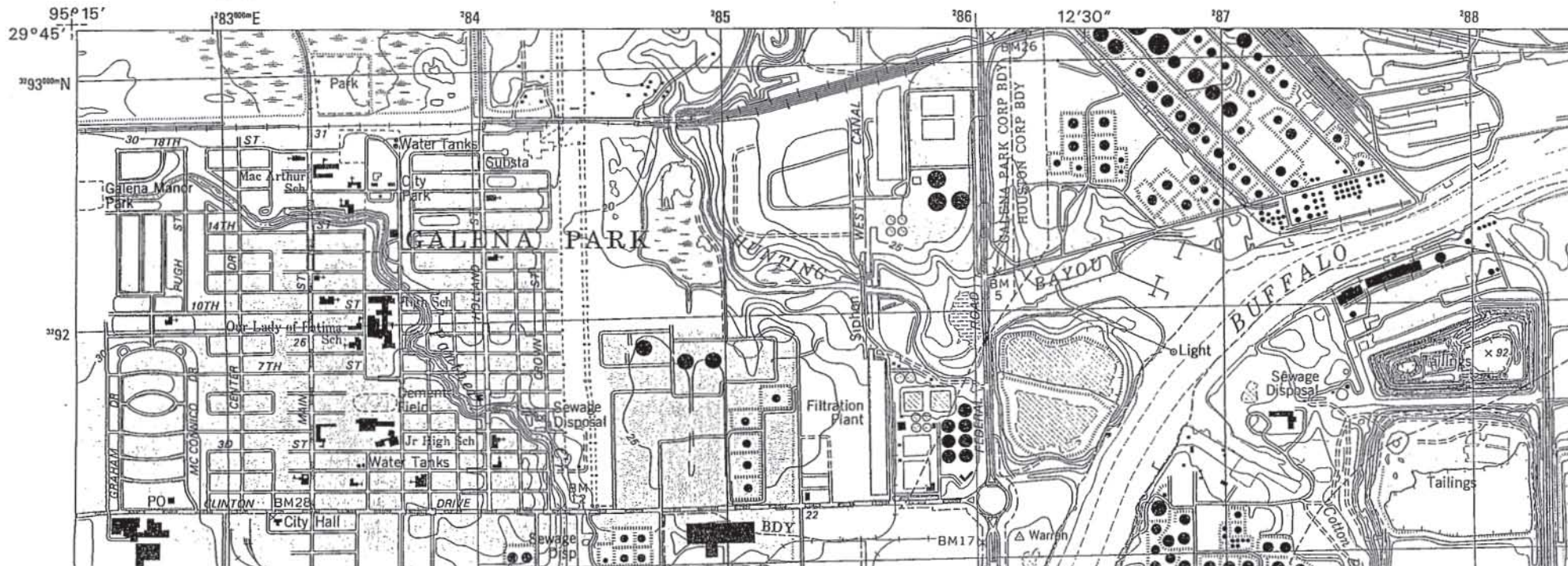
Provide original ground level photographs. Indicate by checking that the following information is provided.

- ☐ At least one original photograph of the new and/or expanded treatment unit location
- ☐ At least one original photograph showing the proposed/existing point of discharge and as much area downstream as can be captured on film. If the discharge is to an open waterbody, show as much area on both sides of the point of discharge as can be captured on film.
- ☐ At least one photograph of the existing/proposed effluent disposal site.

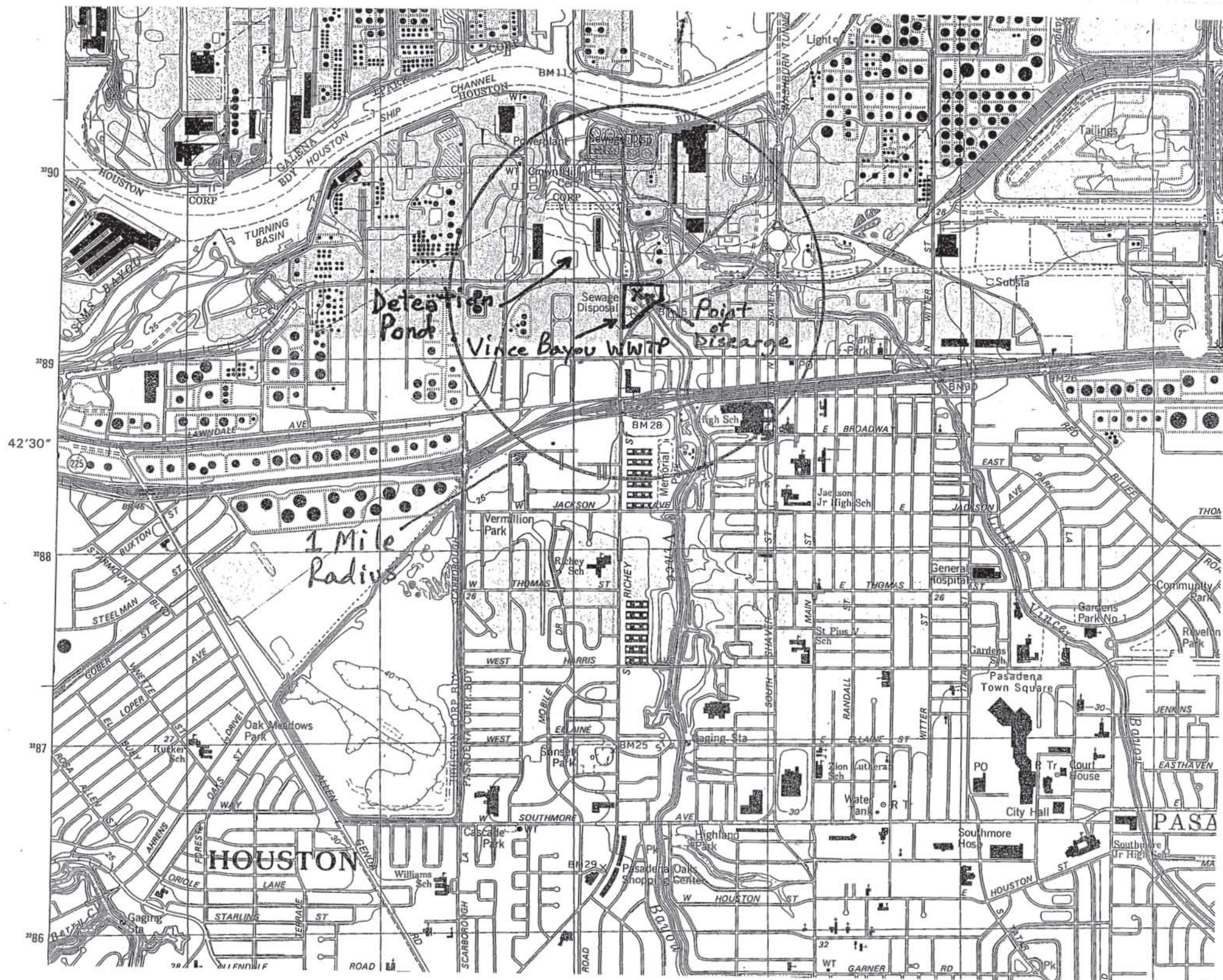
Attachment B

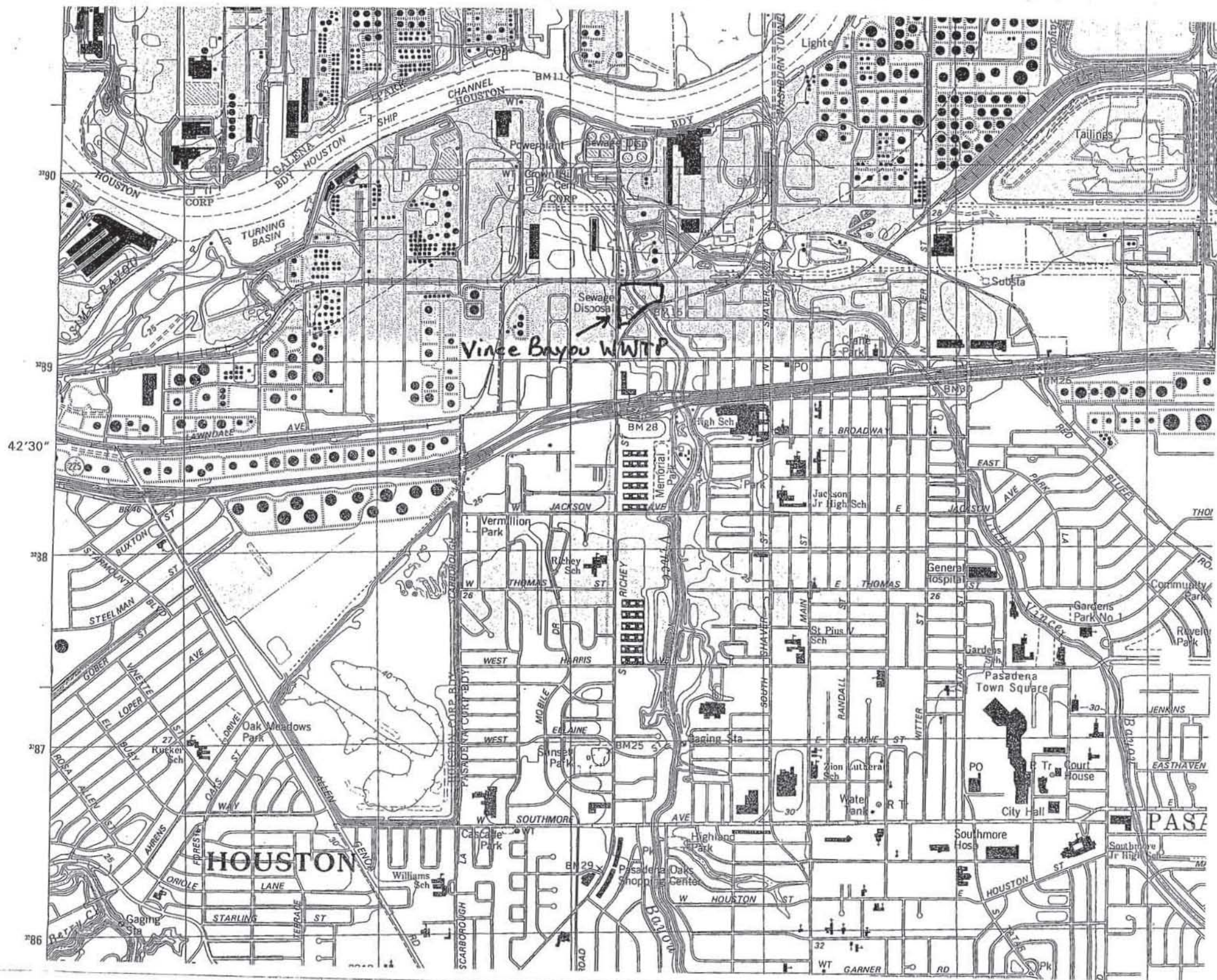


U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY



This topographic map of Galena Park, Texas, is overlaid with a grid. The horizontal axis (longitude) is marked at the top with values 95°15', 96°00' E, 96°15', 96°30', 96°45', 97°00', and 97°15'. The vertical axis (latitude) is marked on the left with values 29°45', 29°50' N, 29°55', and 30°00'. The map shows a network of streets including 18TH, 14TH, 10TH, 7TH, 3D, 1ST, 2ND, 3RD, 4TH, 5TH, 6TH, 7TH, 8TH, 9TH, 10TH, 11TH, 12TH, 13TH, 14TH, 15TH, 16TH, 17TH, 18TH, 19TH, 20TH, 21ST, 22ND, 23RD, 24TH, 25TH, 26TH, 27TH, 28TH, 29TH, 30TH, 31ST, 32ND, 33RD, 34TH, 35TH, 36TH, 37TH, 38TH, 39TH, 40TH, 41ST, 42ND, 43RD, 44TH, 45TH, 46TH, 47TH, 48TH, 49TH, 50TH, 51ST, 52ND, 53RD, 54TH, 55TH, 56TH, 57TH, 58TH, 59TH, 60TH, 61ST, 62ND, 63RD, 64TH, 65TH, 66TH, 67TH, 68TH, 69TH, 70TH, 71ST, 72ND, 73RD, 74TH, 75TH, 76TH, 77TH, 78TH, 79TH, 80TH, 81ST, 82ND, 83RD, 84TH, 85TH, 86TH, 87TH, 88TH, 89TH, 90TH, 91ST, 92ND, 93RD, 94TH, 95TH, 96TH, 97TH, 98TH, 99TH, 100TH. Other features include Galena Manor Park, MacArthur Sch., City Hall, Jr High Sch, Water Tanks, Sewage Disposal, Filtration Plant, and various industrial areas. The map also shows the boundaries of Galena Park, Houston, and Buffalo Bayou.





Reference 14:

Texas Commission on Environmental Quality. Pretreatment Compliance Investigation
Report: Investigation #748898. June 03, 2009. 8 pages.

Texas Commission on Environmental Quality

Investigation Report

MCC RECYCLING LLP

CN603445016

MCC RECYCLING

RN105684302

Investigation # 748898

Incident #

Investigator: GARY FOGARTY

Site Classification

INDUSTRIAL USER-NOT APPROVED

Conducted: 05/18/2009 -- 06/03/2009

No Industry Code Assigned

Program(s): PRETREATMENT

Investigation Type : Compliance Investigation

Location : 200 N RICHEY ST., PASADENA, TX 77506

Additional ID(s) :

Address: 200 RICHEY ST;
PASADENA, TX 77506

Activity Type : REGION 12 - HOUSTON
PTRCNAPPIU - PT IU Recon - Non-Approved Program

Principal(s) :

Role	Name
RESPONDENT	MCC RECYCLING LLP

Contact(s) :

Role	Title	Name	Phone
Participated in Investigation	ENVIRONMENTAL, HEALTH & SAFETY MANAGER	MR JAMES WISE	(713) 472-5668 Work (713) 473-0013
Regulated Entity Mail Contact	PRESIDENT	MR KLAUS GENSSLEF	Work (713) 473-0013 (713) 472-5668
Regulated Entity Contact	PRESIDENT	MR KLAUS GENSSLEF	(713) 472-5668 Work (713) 473-0013

Other Staff Member(s) :

Role	Name
Investigator	KAREN PUENTE
Supervisor	ELIZABETH SEARS
Investigator	MICHAEL DAVIS
Supervisor	BARBARA SULLIVAN
Investigator	STACY PENTECOST
QA Reviewer	KELLEY KARTYE
Investigator	KELLEY KARTYE

Associated Check List

Checklist Name

PRETREATMENT IU LONG FORM - NONAPPROVED PROGRAM

Unit Name

MCC Recycling 748898

Investigation Comments :

INTRODUCTION

An Industrial User Reconnaissance investigation of MCC Recycling LLP was conducted on May 18, 20 and June 3, 2009 to determine compliance with applicable pretreatment and water quality regulations. This investigation involved other TCEQ Houston Region Office environmental investigators. The investigators are Mike Davis and Karen Puente, Spill Response Team, Stacy Pentecost and Kelley Kartye, Water Quality Section, and Edgar St. James, Waste Section. The facility was not notified of the investigation. An exit interview, explaining the results of the investigation, was conducted on June 3, 2009 with Klaus Genssler, President and Mr. Thomas Lykos, Jr., Managing Director of Pantoptic Strategic Advisors, LLC. A copy of the TCEQ Exit Interview Form was received by Mr. Genssler. A Notice of Enforcement letter was issued to facilitate compliance.

GENERAL FACILITY AND PROCESS INFORMATION

The MCC Recycling facility is located at 200 Richey Street, Pasadena, Texas. The site was the former location of the City of Pasadena "old" Vince Bayou Wastewater Treatment Plant. MCC Recycling discharges process wastewater commingled with domestic wastewater to the City of Pasadena New Vince Bayou Wastewater Treatment facility (TPDES Permit No. WQ0010053-009; EPA I.D. No. TX0117528).

The facility received partially treated wastewater piped in from the US Oil Recovery (USOR) facility (which is located at 400 Richey Street, Pasadena, Texas). The MCC Recycling facility plans to receive and treat hauled wastes at a later date. The facility has plans to apply for a TPDES permit at a later date. During the initial days of this investigation, MCC Recycling was acting as a storage site for USOR's wastewater. MCC Recycling had begun trial runs of bio-treating some of the wastewater in a clarifier that was converted into an aeration basin by June 3, 2009.

USOR has rerouted all of their wastewater to the MCC Recycling facility. Prior to February 28, 2009, USOR had been discharging process and domestic wastewater to the City of Pasadena wastewater treatment system. USOR is subject to applicable pretreatment standards contained in 40 CFR Part 437-Centralized Waste Treatment Point Source Category. The MCC Recycling facility will also be subject to the same pretreatment standards once the facility begins to discharge wastewater to the City of Pasadena.

There was some concern that in its current operation, that MCC Recycling would not be subject to applicable pretreatment standards contained in 40 CFR Part 437. This concern was based upon the wording in 40 CFR §437.1(b)(3) and because MCC Recycling currently receives all waste via a pipe. Inquiries were made to the TCEQ Storm Water and Pretreatment Audit Team and to the EPA. The preliminary response from the TCEQ pretreatment auditors was that the MCC Recycling facility is subject to applicable pretreatment standards contained in 40 CFR Part 437. The audit team submitted the inquiry to the TCEQ legal staff for an opinion. However, EPA has determined that the MCC Recycling facility's current operation will be subject to applicable pretreatment standards in 40 CFR Part 437 once the facility begins to discharge wastewater to the City's wastewater treatment system. This determination is based upon the development document for 40 CFR Part 437. According to the development document, since MCC Recycling is providing further treatment for USOR's process wastewater, MCC Recycling is also subject to applicable pretreatment standards in 40 CFR Part 437. The TCEQ has agreed to follow EPA's opinion.

The facility has been serving as a storage facility. On May 18 and 20, 2009, actual treatment was incidental settling that occurred while storing USOR's wastewater. However, MCC Recycling began some wastewater treatment though aeration by June 3, 2009. One of the old primary clarifiers has been converted to an aeration basin. This aeration basin was observed operating on June 3, 2009. The treated wastewater from the aeration basin was being stored in a frac tank. The City of Pasadena agreed to receive the wastewater on a batch basis from the aeration basin if it will meet applicable pretreatment standards. Therefore, the contents of the frac tank will be analyzed to determine if the wastewater will meet applicable pretreatment standards. However, if the wastewater doesn't meet the applicable pretreatment standards, then MCC Recycling will have the wastewater hauled to a facility that can accept such wastes. USOR and MCC Recycling have had

some wastes hauled to CES Environmental Services.

The pretreatment standards which apply to this facility include the applicable categorical pretreatment standards in 40 CFR §437.47(e) and the City of Pasadena's local limits. Since MCC Recycling receives USOR's process wastewater commingled with USOR's domestic wastewater, alternative limits using the combined wastestream formula (CWF) must be developed to account for any dilution. A copy of the contract between USOR and the City of Pasadena and the industrial use permit are attached to this report.

BACKGROUND INFORMATION

Prior to USOR acquiring the property and creating MCC Recycling, the site was owned and operated by the City of Pasadena. TCEQ Water Quality (WQ) Section last inspected the site on October 29, 2003. The plant's permit (# WQ0010053-005) was canceled in a letter from the TCEQ dated May 28, 2004. USOR acquired the site around February 2009. MCC Recycling reported a spill from a lift station on Friday, May 15, 2009. A TCEQ Spill Response investigator responded and observed the spill on the same day. This facility had another spill on Wednesday, May 20, 2009. Harris County Environmental and Health Services through the Harris County Courthouse issued two temporary restraining orders in an attempt to stop the spills at MCC Recycling. On June 8, 2009 a temporary injunction was granted by the Harris County Court for MCC Recycling to stop receiving wastes until certain conditions were met. The restraining injunction also requires USOR to empty an old aeration basin at the USOR facility. A copy of the temporary restraining injunction is attached to this report.

ADDITIONAL INFORMATION

This investigation was initiated on May 18, 2009, as a result of a spill at MCC Recycling on Friday, May 15, 2009. The Spill Team also received a report on May 18, 2009, that there was black water in Vince Bayou in the vicinity of the MCC Recycling facility. The Spill Team contacted MCC Recycling and was told that the City of Pasadena was the source of the black water. The TCEQ investigators stopped at the City of Pasadena New Vince Bayou Wastewater Treatment Facility (WWTF) on May 18th, to observe the outfall. The New Vince Bayou WWTF discharges into Little Vince Bayou which is a tributary of Vince Bayou. Little Vince Bayou joins Vince Bayou north of the MCC Recycling facility. The two bayous join together at North Richey Street next to the US Oil Recovery facility. The WWTF discharge to Little Vince Bayou was clear. Little Vince Bayou above and below the outfall was also clear. There was no black water being discharged from the New Vince Bayou WWTF nor was there any black water observed near the permitted outfall. While at the New Vince Bayou WWTF, the investigators received a report that MCC Recycling was discharging wastewater to Vince Bayou during the night from a pipe connecting the pump room to the chlorine contact chamber. The report indicated that there was a quick connect to one of the pumps to which a flexible hose would be connected. The hose would connect to a buried pipe through a hole in the wall of the pump room. The buried pipe would carry wastewater to the old chlorine contact chamber and be discharged to Vince Bayou.

The investigators proceeded to Vince Bayou near the intersection of Pitts and McDonald Streets. Vince Bayou was black. On the opposite bank was a lift station. There were manholes on both sides of the bank with the manhole covers ajar and sewage debris on the ground and outsides of the manholes. From the same location the MCC Recycling facility east plant could be seen. The investigators did not see any active discharge of wastewater to the bayou while at the Pitts and McDonald Streets location.

The investigators proceeded to the MCC Recycling west plant. The entrance is on North Richey Street. The May 15, 2009 spill area was observed. Cleanup of the spill was progressing. The spill area was along the bank of Vince Bayou and extended to the bayou. The lift station was part of the MCC Recycling facility for transferring wastewater from the west plant to the east plant. The west plant consisted of the headworks, a trickling filter, and two primary clarifiers. Wastewater was seen entering the headworks. Wastewater was also being stored in the two primary clarifiers. The lower primary clarifier had floating aerators in it. However, the aerators were not operating. The trickling

filter was full of filter media. The facility representative stated that wastewater was also stored in the trickling filter. The filter media obscured prevented the investigators from seeing the wastewater in the trickling filter. There was a polyvinyl chloride (PVC) pipe going to one of the clarifiers and to the trickling filter. Blue PVC pipe also went up the side of the headworks. Blue pipe also went along the side of the headworks towards a sample point and then towards the back of the property along the fence. The pipe followed the fence to a foot bridge. The foot bridge linked both the east and west plants. The blue pipe crossed the bayou while suspended under the bridge and connected to a pump room. The blue pipe was installed to transfer wastewater from the east plant to the City of Pasadena. While crossing the bridge, the bayou was observed to be black. At the east plant there was a small clarifier near the pump room. Connected to the pump room was what had been the digester. Further towards the back of the property was what had been the aeration basin for the old Vince Bayou Wastewater Treatment Plant. The remains of a sand filter were next to the aeration basin. Two final clarifiers were behind the aeration basin. All of the clarifiers in the east plant were full of wastewater. The sand filter was dry. To the west of the sand filter was what had been the chlorine contact chamber. Several compartments of the chlorine contact chamber contained sludge. The flow measurement channel of the chamber had a potable water line discharging into it. The water in the channel was observed overflowing across the final weir to the old outfall. As this outfall was no longer permitted to discharge to the waters of the state, this was an unpermitted discharge. This was pointed out to the facility representative. Next to the chlorine contact chamber was a patch of new concrete. There was a trail of bare ground through the grass. The trail went towards a gate then turned left and followed the fence towards the pump room. The gate provided access to the area where the old wastewater treatment plant's outfall discharged to Vince Bayou. The bayou was observed at the old outfall. A very slight flow was observed going into the bayou at the outfall. Where the trail turned at the gate, there were metal bolts exposed in the ground. The bolts were the same as those used to make connections in the blue PVC pipe observed earlier. There were more bolts in the ground near the fence by the pump room. The trail turned left again and went towards the pump room. There was a square hole in the wall of the pump room near the ground in the vicinity of the trail. Inside the pump room was a quick connect to one of the pumps. About this time the facility representative reported that MCC Recycling personnel had found a shut off valve for the water line discharging into the chlorine contact chamber. The chlorine contact chamber was observed again. One of the personnel attached the valve to the water line and closed it. The water flow decreased to a point that water in the channel no longer overflowed over the weir. While this was going on, the Harris County Environmental Crimes Task Force was notified of the mystery pipe.

The investigators returned to the west plant and observed wastewater reported to be from USOR entering the headworks. Afterward, the US Oil Recovery (USOR) facility was visited to review records. While there, agents of the Texas Parks and Wildlife Department who were also members of the Environmental Crimes Task Force arrived at USOR. All of the investigators went back to the MCC Recycling facility.

The investigators walked from the west plant to the east plant. The Parks and Wildlife investigators dug around the trail and exposed blue PVC pipe. An end of the pipe was dug up and found next to the pump room near the square hole in the wall. They collected soil samples from the buried end of the pipe. The facility representative contacted Mr. Genssler who denied any more sampling without a warrant. The Parks and Wildlife Investigators explained that the sample that they had already collected was evidence in their possession and that they would obtain a warrant if needed. The on-site facility representative explained this to Mr. Genssler. They agreed to allow the Parks and Wildlife Investigators to proceed with the investigation. Consent was verbally given by Mr. Wise for USOR and MCC Recycling. The pipe was traced to the chlorine contact chamber. It connected to the chamber above the outfall. The City of Pasadena was contacted. The City sent a tanker truck full of water to the scene. The tanker pumped water and dye into the exposed end of the pipe. Investigators viewed the hole in the chlorine contact chamber and where the outfall discharged into Vince Bayou. A very small flow was detected at the outfall. Some clear water also came out of the hole in the wall of the chlorine contact chamber which flowed to the outfall. The dye did not show up at either site. The pumper truck was moved to the chlorine contact chamber and another volume of water was pumped into the hole in the wall of the chamber. Water and dye discharged from the

end of the buried pipe next to the pump room. Dye was also placed into the bottom of the chlorine contact chamber outfall. Some traces of the green dye showed up at the outfall, however, the truck ran out of water. Pictures were taken during the investigation. The investigation ended for the day around 6:00 pm.

The MCC Recycling facility received another site investigation on Wednesday, May 20, 2009 due to a spill at one of the clarifiers. The TCEQ investigators met with representatives of Harris County Environmental and Public Health at the east plant. The clarifier involved in the spill was the small clarifier near the pump room and digester. The spill was alleged to be due to a failed valve which allowed wastewater in the digester to gravity flow back to the clarifier. The wet soil extended to Vince Bayou at the foot bridge. Water in Vince Bayou was still black. While there, TCEQ investigators verified that the potable water line above the chlorine contact chamber was still shut off. The old aeration basin of the east plant was verified to contain wastewater. The entire east and west plants were viewed to ascertain if any other discharges were occurring. The spill was the only discharge observed that day. Wastewater was still being pumped from USOR to the west plant headworks.

Additional TCEQ personnel aided in collecting water samples from Vince Bayou. A team of investigators from the TCEQ Surface Water Quality Monitoring (SWQM) collected water samples from downstream of the MCC Recycling facility. A team of TCEQ WQ investigators and Spill Team investigators collected water samples from Vince Bayou upstream of the MCC Recycling facility. One set of samples was collected where Vince Bayou passed near the intersection of Pitts and McDonald Streets. Another set of samples was taken as black water moved up stream next to Memorial Park in Pasadena. Water samples from Vince Bayou were taken upstream of the black water at Memorial Park.

Another spill was reported by MCC Recycling to the TCEQ Spill Team to have taken place on May 26, 2009. This spill occurred at the west plant lift station in the same area as the spill that occurred on May 15, 2009.

Another spill was reported By MCC Recycling to the TCEQ Spill team on May 29, 2009. It is not clear in the report if the spill was at the west plant lift station or at the east plant clarifier.

TCEQ WQ investigators returned to MCC Recycling and USOR on Wednesday, June 3, 2009 to conclude the investigation started May 18, 2009. The manhole where MCC Recycling is connected to the City of Pasadena wastewater collection system was opened. There was no discharge of wastewater to the City of Pasadena. The MCC Recycling facility was toured again. The primary clarifier in the west plant that had been changed to an aeration basin was in operation. However, the water in the aeration basin was black. The operator explained that the night crew had allowed it to go septic. Next to the aeration basin were frac tanks. The purpose of the frac tanks was to store the treated water from the aeration basin for testing. The water was to be tested for the permit parameters imposed by the City of Pasadena. If the limits were met, then the treated wastewater could be batch discharged to the City. The chlorine contact chamber was viewed again. The water level in the flow measuring channel was still below the final weir.

The investigation moved to the USOR facility to perform the exit interview. Mr. Genssler received the preliminary findings of the investigation.

An additional spill was reported by MCC Recycling to the TCEQ Spill Team on June 8, 2009.

As stated above, there were five reported spills to the bayou and an unpermitted discharge during the period of May 15, 2009 to June 8, 2009. The spill that occurred on May 15, 2009 resulted in 500 gallons of wastewater going into the bayou. The spill that occurred on May 20, 2009 resulted in 60 gallons of wastewater going into the bayou. The spill report for the May 26, 2009 spill indicates that 50 gallons of wastewater entered the bayou. The spill report for the May 28, 2009 spill indicated that 300 gallons of wastewater entered the bayou. The spill report for June 8, 2009, reports that 30 gallons of wastewater entered the bayou. The Spill reports for May 15, May 20, and

May 26 are in error for listing the receiving stream. In each case the spill discharged to Vince Bayou. There was no evidence that any spill prevention measures were taken by MCC Recycling until forced to do so by the temporary injunction. The frequency of the spills, lack of spill prevention or containment measures, and the unpermitted discharge indicate negligence by MCC Recycling.

CONCLUSION:

The following violations were found.

MCC Recycling failed to prevent unpermitted discharges on May 15, May 18, May 20, May 26, May 29, and June 8, 2009 to Vince Bayou. The discharge that was observed on May 18, 2009 was from the chlorine contact chamber. The other discharges were due to spills.

MCC Recycling has failed to account for possible dilution as a means of achieving compliance with applicable pretreatment standards. The current sample point is intended to be monitored for compliance with applicable pretreatment standards in 40 CFR Part 437 and the City of Pasadena local limits. However, MCC Recycling had received a mixture of USOR's process and domestic wastewater. The wastewater is currently being discharged to a publically owned treatment works. Categorical pretreatment standards apply only to process wastewater subject to specific industrial regulations contained in 40 CFR Parts 405 through 471. These standards apply either after process or after treatment and before any non-process or dissimilar wastestreams comingle with the wastewater. Since this applies to the wastewater currently being stored at MCC Recycling which contains both process and domestic wastewater from US Oil Recovery, then alternative limits using the combined wastestream formula must be developed. If the alternative limits are found to be the same numerical limits as the applicable categorical pretreatment standards then the facility may use the applicable categorical pretreatment standards instead of developing new alternative limits so long as the volumes of process and domestic wastewater do not change.

MCC Recycling failed to submit a Baseline Monitoring Report (BMR) to the TCEQ Storm Water and Pretreatment Team 90 days prior to discharging process wastewater subject to applicable categorical pretreatment standards (in this case the applicable pretreatment standards contained in 40 CFR Part 437-Centralized Waste Treatment Point Source Category) to a publicly owned treatment works.

MCC Recycling must also submit a 90 Day Compliance report 90 days after submission of the BMR.

NOE Date: 8/3/2009**Others
ASSOCIATED TO A NOTICE OF ENFORCEMENT****Track No: 370024****Compliance Due Date: To Be Determined****Violation Start Date: Unknown****30 TAC Chapter 315.1****Alleged Violation:**

Investigation: 748898

Comment Date: 07/28/2009

Failure to prevent dilution of process wastewater. MCC Recycling must account for dilution caused by the mixing of US Oil Recovery domestic wastewater with US Oil Recovery process wastewater. MCC Recycling's wastewater consists of US Oil Recovery's wastewater. MCC Recycling currently discharges wastewater to the City of Pasadena wastewater treatment system. The City of Pasadena is a Publicly Owned Treatment Works (POTW). US Oil Recovery's wastewater included process wastewater, subject to applicable pretreatment standards in 40 CFR Part 437-Centralized Waste Treatment Point Source Category, mixed with domestic wastewater. Since the wastewater is already commingled, alternative limits must be developed using the combined wastestream

formula.

Recommended Corrective Action: Alternative limits using the combined wastestream formula must be developed and applied at the designated sample point in place of the applicable categorical pretreatment standards. However, MCC Recycling may provide data which demonstrates that the amount of domestic wastewater being commingled with the process wastewater is not of sufficient volume to dilute the process wastestream. This can be accomplished by use of the combined wastestream formula.

Track No: 370034

Compliance Due Date: To Be Determined

Violation Start Date: 7/8/2009

30 TAC Chapter 315.1

Alleged Violation:

Investigation: 748898

Comment Date: 07/09/2009

Failure to submit a Baseline Monitoring Report (BMR) 90 days prior to discharging process wastewater to a publicly owned treatment works (POTW). As of July 8, 2009, MCC Recycling LLP has been discharging process wastewater to the City of Pasadena wastewater treatment system. There is no record of a BMR having been submitted to the TCEQ Storm Water and Pretreatment Team.

Recommended Corrective Action: A Baseline Monitoring Report (BMR) must be submitted to the TCEQ Storm Water and Pretreatment Team. In addition, a 90 Day Compliance Report must also be submitted to the TCEQ Storm water and Pretreatment Team 90 days after submission of the BMR.

Track No: 370043

Compliance Due Date: To Be Determined

Violation Start Date: 5/15/2009

TWC Chapter 26.121

Alleged Violation:

Investigation: 748898

Comment Date: 07/29/2009

Failure to prevent unauthorized discharges of wastewater. On May 15, 2009, MCC Recycling reported to the TCEQ that 1000 gallons of wastewater spilled to the ground with 500 gallons discharged to Vince Bayou. On May 18, 2009, an unauthorized discharge from the old chlorine contact chamber was observed. The amount of discharge is unknown. On May 20, 2009, MCC Recycling reported a 600 gallon wastewater spill to the ground of which 60 gallons discharged to Vince Bayou. Wet ground was observed going to the bank of the bayou which verified that the spill had reached Vince Bayou. On May 26, 2009, MCC Recycling reported another 500 gallons of wastewater spilled to the ground of which 50 gallons discharged to Vince Bayou. On May 29, 2009 MCC Recycling reported another 3000 gallons of wastewater spilled to the ground of which 300 gallons discharged to Vince Bayou. On June 8, 2009, MCC Recycling reported another 300 gallons of wastewater that spilled to the ground of which 30 gallons discharged to Vince Bayou. The frequency of the discharges and the lack of spill prevention measures indicates negligence on the part of MCC Recycling.

Recommended Corrective Action: MCC Recycling LLP must prevent any unpermitted discharge of wastewater to the waters of the State of Texas.

Signed _____
Environmental Investigator

Date _____

Signed _____
Supervisor

Date _____

Attachments: (in order of final report submittal)

___ Enforcement Action Request (EAR)

___ Maps, Plans, Sketches

___ Letter to Facility (specify type) : _____

___ Photographs

___ Investigation Report

___ Correspondence from the facility

___ Sample Analysis Results

___ Other (specify) : _____

___ Manifests

___ NOR

Reference 15:

Harris County District Court. Temporary Injunction No. 2009-32636. March 11, 2010.

discharging ignitable waste from the MCC facility under or across N. Richey Road in Pasadena, Texas to the City of Pasadena New Vince Bayou Wastewater Treatment Plant;

1.3 The Court further finds that Harris County is likely to prevail at the trial on the merits of its claim that MCC Recycling, L.L.P. have caused ~~nuisance odors and~~ toxic emissions and any other violations of the Texas Clean Air Act at defendants' facilities in the 200 and 400 blocks of North Richey Road;

1.4 The Court further finds that Harris County is likely to prevail at the trial on the merits of ^{its} ~~it~~ claim that U.S. Oil Recovery, L.P. and MCC Recycling, L.L.P. have discharged wastewater or other pollutants into or adjacent to waters in the state of Texas;

1.5 The Court further finds that Harris County is likely to prevail at the trial on the merits of its claim ~~that Harris County is likely to prevail at the trial on the merits of its claim~~ that defendants are illegally storing hazardous waste at the defendants' facilities at 400 N. Richey Road;

1.6 The Court further finds that Harris County is likely to prevail at the trial on the merits of its claim that Klaus Genssler is the person in charge of the day-to-day management and operations of the U.S. Oil Recovery, L. P. facility located at 400 N. Richey Road and the MCC facility located at 200 N. Richey Road in Pasadena, Texas and has caused suffered allowed or permitted violations of the law that have resulted in the conditions at 400 N. Richey and 200 N. Richey;

1.7 The Court further finds that Harris County is likely to prevail at the trial on the merits of its claim that Harris County and the State of Texas are authorized to bring this application and that this Court has jurisdiction over the defendants and the subject matter and may lawfully enter this Temporary Injunction; and

1.8 The Court further finds that Harris County is likely to prevail at the trial on the merits of its claim that the defendants operate the waste processing and handling facilities located at 200 N. Richey Road and 400 N. Richey Road in Pasadena, Harris County, Texas.

1.9 The Court further finds that Harris County is likely to prevail at the trial on the merits of its claim that the defendants are storing leaking drums of hazardous waste and drums of leaking waste that are not labeled at 400 N. Richey.

1.10 The Court further finds that the defendants have caused and are likely to cause irreparable harm and injury ~~if not enjoined and that Harris County is likely to prevail at the trial~~

if not immediately enjoined
~~on the merits because of the defendants' discharge of hazardous waste into Vince Bayou tends to~~ *which will*
further
endanger human health and the environment,

2. TEMPORARY INJUNCTION

IT IS THEREFORE ORDERED that Harris County's application for temporary injunction is hereby granted.

IT IS FURTHER ORDERED that defendants Klaus Genssler, U.S. Oil Recovery, L.P., MCC Recycling, L.L.P., and Genssler Environmental Holdings, L.L.C., are hereby ORDERED

AND COMMANDED
v to do the following:

1. Klaus Genssler, U.S. Oil Recovery, L.P., MCC Recycling, L.L.P., and Genssler Environmental Holdings, L.L.C., are hereby ORDERED, within 24 hours of the effective date of this ORDER, to cease committing any act or engaging in any activity which in itself or in conjunction with any other discharge or activity causes, continues to cause, or will cause pollution into or adjacent to the water in the state, from the defendants' facilities at 200 N. Richey Road and 400 N. Richey Road, as required by Texas Water Code, Chapter 26.121.
2. Klaus Genssler, U.S. Oil Recovery, L.P., MCC Recycling, L.L.P., and Genssler Environmental Holdings, L.L.C., are hereby ORDERED, within 24 hours of the effective date of this ORDER, to cease discharges of industrial waste, contaminated storm water or any other pollutant into or adjacent to water in the state, from the defendants' facilities at 200 N. Richey Road and 400 N. Richey Road, as required by Texas Water Code, Chapter 26.121.
3. Klaus Genssler, U.S. Oil Recovery, L.P., MCC Recycling, L.L.P., and Genssler Environmental Holdings, L.L.C., are hereby ORDERED, to, within 24 hours of

the effective date of this ORDER, cease receiving and/or taking in any wastewater or oily water or any combination of wastewater or oily water, or any other material at 200 N. Richey Road from 400 N. Richey Road or from any other source.

4. Klaus Genssler, U.S. Oil Recovery, L.P. MCC Recycling, L.L.P., and Genssler Environmental Holdings, L.L.C., are hereby ORDERED, within 60 days of the effective date of this ORDER, to remove all contents from all tanks, structures, above ground piping and below ground piping, at 200 N. Richey to a facility authorized to receive the material by the Texas Commission on Environmental Quality (TCEQ)..
5. Klaus Genssler, U.S. Oil Recovery, L.P., MCC Recycling, L.L.P., and Genssler Environmental Holdings, L.L.C., are hereby ORDERED, within 24 hours of the effective date of this order of this ORDER to notify EPH at 713-920-2831 of any unauthorized discharge or spill under Texas Water Code, Chapter 26.121, at 200 N. Richey Road or 400 N. Richey Road, within the first hour of any U.S. Oil Recovery, L.P. or MCC Recycling L.L.P. employee's discovery of the discharge or spill.
6. Klaus Genssler, U.S. Oil Recovery, L.P., MCC Recycling, L.L.P., and Genssler Environmental Holdings, L.L.C., are hereby ORDERED, within 15 days of the effective date of this ORDER, to conduct an industrial solid waste and municipal hazardous waste, waste classification of the contents in the C-63 and C-64 bio reactors listed on TCEQ Non Hazardous Waste Permit Number 52123 as permit units 17 and 18, located at 400 N. Richey Road, as required by 30 Texas Administrative Code (TAC), Subchapter R § 335.501 thru § 335.521. .
7. Klaus Genssler, U.S. Oil Recovery, L.P., MCC Recycling, L.L.P., and Genssler Environmental Holdings, L.L.C., are hereby ORDERED within 60 days of the effective date of this order to remove the contents from C-63 and C-64 bio reactors listed on TCEQ Non Hazardous Waste Permit Number 52123 as permit units 17 and 18, located at 400 N. Richey Road, and to dispose of those contents at a facility not associated with the defendants and that is authorized by the TCEQ to receive the waste, to prevent the imminent threat of discharge of the waste, as required by 30 TAC, Chapter 335.4.
8. Klaus Genssler, U.S. Oil Recovery, L.P., MCC Recycling, L.L.P., and Genssler Environmental Holdings, L.L.C., are hereby ORDERED, within 24 hours of the effective date of this ORDER, shall not use the C-63 and C-64 bio reactors listed on TCEQ Non Hazardous Waste Permit Number 52123 as permit units 17 and 18, located at 400 N. Richey Road, to treat, process, store or contain waste, wastewater or oily water or any combination of wastewater or oily water or storm water or any other material.
9. Klaus Genssler, U.S. Oil Recovery, L.P., MCC Recycling, L.L.P., and Genssler Environmental Holdings, L.L.C., are hereby ORDERED, within 24 hours of the effective date of this ORDER, to cease receiving and/or taking in any wastewater

or oily water or any combination of wastewater or oily water, or any other material at 400 N. Richey.

10. Klaus Genssler, U.S. Oil Recovery, L.P., MCC Recycling, L.L.P., and Genssler Environmental Holdings, L.L.C., are hereby ORDERED, within 20 days of the effective date of this ORDER, to conduct an industrial solid waste and municipal hazardous waste, waste classification of the contents of each roll-off container at 400 N. Richey Road, utilizing a representative sample of the contents of each roll-off container, as required by 30 TAC, Subchapter R § 335.501 thru § 335.521.
11. Klaus Genssler, U.S. Oil Recovery, L.P., MCC Recycling, L.L.P., and Genssler Environmental Holdings, L.L.C., are hereby ORDERED within 60 days of the effective date of this order to dispose of the contents of all roll-off containers at a facility not associated with the defendants and that is authorized by the TCEQ to receive the waste, as required by TCEQ Non Hazardous Waste Permit No. 52123.
12. Klaus Genssler, U.S. Oil Recovery, L.P., MCC Recycling, L.L.P., and Genssler Environmental Holdings, L.L.C., are hereby ORDERED, within 24 hours of the effective date of this ORDER, to provide to Harris County, any analytical results or other data used to make hazardous waste determinations and waste classifications, all waste profiles and all manifests for each shipment of waste described in no. 4, no. 7, no. 11 and no. 13 of this ORDER, as these documents are generated and no later than sixty days (60) days from the effective date of this ORDER.
13. Klaus Genssler, U.S. Oil Recovery, L.P., MCC Recycling, L.L.P., and Genssler Environmental Holdings, L.L.C., are hereby ORDERED, within 15 days of the effective date of this ORDER, to hire an environmental contractor, ~~approved by Harris County~~ to classify, prepare and dispose of, as provided by law, all leaking drums, totes and other containers and all hazardous waste contained in drums, totes and other containers at 200 and 400 N. Richey.
14. Klaus Genssler, U.S. Oil Recovery, L.P., MCC Recycling, L.L.P., and Genssler Environmental Holdings, L.L.C., are hereby ORDERED, as of the effective date of this ORDER, to cease emitting to the air, contaminants or combinations thereof, in such concentration and of such duration as interfere with the normal use and enjoyment of property from 200 N. Richey Road and 400 N. Richey Road, as required by 30 TAC § 101.4.
15. Where a document is required or permitted to be delivered to the Harris County Attorney's Office, Environmental Division, under the terms of the Judgment, delivery shall constitute and shall require the actual receipt by the Harris County Attorney's Office, Environmental Division, 1019 Congress, 15th Floor, Houston, Texas 77002, ATTN: Rock W. A. Owens, by the time for completion of the action.

Plaintiffs shall be allowed such process and writs as may be reasonable or necessary for the enforcement of this Final Judgment unless specifically provided otherwise herein.

IT IS FURTHER ORDERED that plaintiff, pursuant to Tex. Civ. Prac. & Rem. Code. Ann. § 6.001 is not required to file a bond in support of this order.

IT IS FURTHER ORDERED that the effective date of the order is the date it is signed or served in the parties, whichever is later.

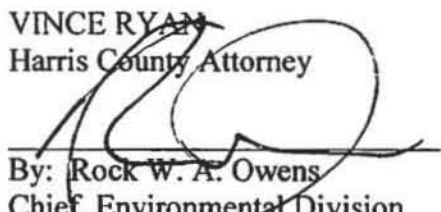
IT IS FURTHER ORDERED that the trial on the merits in this matter is set for June 14, 2010.

SIGNED this 11 day of March, 2010


JUDGE PRESIDING

AS TO FORM
APPROVED AND ENTRY REQUESTED:

VINCE RYAN
Harris County Attorney


By: Rock W. A. Owens
Chief, Environmental Division
State Bar No. 15382100
Environmental Division
State Bar No. 00785742
1019 Congress, 15th Floor
Houston, Texas 77002
Telephone: (713) 755-7962
Fax: (713) 755-2680

**ATTORNEYS FOR PLAINTIFF
HARRIS COUNTY, TEXAS**

Reference 16:

Harris County Public Health and Environmental Services. Environmental Public Health Division, Investigation Report ID 15233, October 23, 2009. 111 Pages.

Harris County
HCPHES
Public Health & Environmental Services
Environmental Public Health Division

MEMORANDUM

DATE: December 21, 2009
TO: Files
FROM: Denise Hall *DNH*
SUBJECT: MCC Recycling, L.L.P. (ID 15233)

This investigation began on October 23, 2009 and was completed on October 30, 2009. The resulting Violation Notice (VN) was dated December 7, 2009. Compliance Services referred this case to Harris County Environmental Crimes for further investigation on 11/16/09.

Harris County
HCPHES
Public Health & Environmental Services

Environmental Public Health Division

INVESTIGATION REPORT

INVESTIGATION DATE: October 23, 2009

TIME: 11:30 AM to 4:15 PM

ID 15233
MCC Recycling LLP
c/o U. S. Oil Recovery, L.P.
400 North Richey Road
Pasadena, Texas 777506

LOCATION OF INVESTIGATION: SE corner of Vince Bayou at W. Richey; 200 N. Richey

KEY MAP: 536 G

PERSON CONTACTED: See below TELEPHONE NUMBER:

TITLE:

WEATHER: Mostly Sunny WIND DIRECTION: NE - SE SPEED: 5-15 MPH

DOB: TDL#: PHYSICAL DESCRIPTION:

INVESTIGATOR: E. A. Guynn PHOTOS: 150+ in 7 files

NATURE OF INVESTIGATION: Water – Industrial - Site Inspection

VIOLATION: TWC 26.121(a)(1); Provision No. 1 of Temporary Injunction 2009-32636

NARRATIVE:

Introduction:

On May 29, 2009, Senior Coordinator – Training Elizabeth Guynn (myself) and Investigator Tony Tomlinson observed a 5-15 GPM discharge originating from a seep in the side of the north bank of Vince Bayou approximately 30 feet east of W. Richey Rd. in Pasadena (see Attachment A). This discharge was observed while conducting an investigation of a spill at the MCC Recycling LLP (MCC) facility located at 200 N. Richey and was thought, at the time, to be unrelated based on location. Al Rushanan photographed this discharge on 5-30-09, he did not collect samples as it was a Saturday and sample preservation times are limited. The City of Pasadena was notified of the discharge due to the proximity to their Pitts Rd. lift station and with regard to their stormwater permit requirements. Pasadena stated that there were no known

INVESTIGATION REPORT
MCC Recycling LLP
October 23, 2009
Page 2

sewage lines in that area that could be discharging and through a limited investigation determined that the discharge may be the result of water backflowing through wildlife dens constructed in the bank of the bayou but they could not be sure at the time. Issues making the initial investigation of this discharge difficult included the fact that Pasadena was notified on June 1, 2009, the discharge or seep location is located under water during high tide, and the discharge had apparently stopped by the time Pasadena was able to inspect the site. It was determined by the HCPHES investigators that we would periodically check the site to see if the discharge occurred again and attempt to track where the discharge was originating.

This report describes the activities that occurred on the dates of October 23, 2009 when the discharge was visible again and additional investigation was initiated, to October 29, 2009 when the responsible party, MCC Recycling LLP, was verified to have plugged the source of the discharge.

The persons that participated in this investigation include:

Al Rushanan – HCPHES Investigator I	Stacy Pentacost – TCEQ
Elizabeth Guynn – HCPHES Sr Coordinator	Gary Fogarty – TCEQ
John Emerson – HCPHES Permit Specialist	Dr. Dayananda – City of Pasadena
Denise Hall – HCPHES Compliance Coordinator	Norman Lily – City of Pasadena
Karen Carrion – TCEQ	Rick Helton – City of Pasadena

Persons contacted at MCC Recycling LLP include:

Bob Brown – Controller, US Oil Recovery LP (USOR)	Louis Baca – Employee
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Tommy Kaiser – Electrician USOR/MCC

Jhonaton Lara – Employee USOR/MCC

Other persons were present during this investigation but did not actively participate in gathering information. These included employees of the City of Pasadena who provided labor, Harris County Precinct 2 employees, a US Coast Guard representative, and the US EPA all of whom observed for a brief period.

October 23, 2009:

HCPHES Investigator, Al Rushanan, rechecked the location described in the introduction and found a discharge (see report dated 10-23-09 under this subject). He described the discharge as a black effluent flowing at approximately 5 gallons per minute that could be easily be seen due to an unusually low water level in the bayou. Mr. Rushanan documented the discharge with photos and short videos. He also

collected samples (see Attachment B). Mr. Rushanan noted that the odor of the discharged material resembled the odor originating from the MCC facility at 200 N Richey.

Mr. Rushanan contacted Sarah Metzger with the City of Pasadena who met him at the site and also observed the discharge. Ms. Metzger agreed to begin investigation on the following Monday.

October 24, 2009:

Mr. Rushanan rechecked the discharge site and found that it was submerged. He found that the discharge was still evident most notably due to the color difference of the discharged water (black) and the water in the receiving stream (Vince Bayou). Mr. Rushanan took photos to document the ongoing discharge.

October 25, 2009:

Mr. Rushanan rechecked the discharge site and found that it was still submerged but appeared the same as the previous day. Mr. Rushanan took photos to document the ongoing discharge.

October 26, 2009:

The investigation by the City of Pasadena was put off by one day due to heavy rains (see Attachment C). Based on the description of the discharge provided by Mr. Rushanan and personal observations of the sample, Sr. Coordinator – Training, Elizabeth Guynn, began searching old schematics of the former Vince Bayou Waste Water Treatment Plant (WWTP) for any potential pipes that could leak and result in the above described discharge (see Attachment D- a CD Provided by City of Pasadena Public Works on 9/15/09 containing historical Vince Bayou WWTP schematics). The schematics indicate that the original WWTP, first built pre-1960, underwent major modifications sometime between 1962 and 1965. The As-built plans were signed 3-16-65. These plans included the construction of a new headworks on the west side of Vince Bayou and the repurposing of the original headworks/lift station on the east side of the facility to be used for recirculation/overflow from east side vessels. It appears from the plans that, to accomplish this, one force main and a major pipe bringing influent to the plant from the Pitts Rd. lift station were decommissioned and new pipes built to the new headworks. Additionally, a lateral line from the adjacent neighborhood to the main influent line was relocated directly to the Pitts Rd. lift station (the relocated line is still in use today). Diagrams of these lines can be found in Attachment D, files D-2-1 on disc pages 6, 64, 22, and 54 (see Attachment E for prints). In reviewing these documents, it appeared that the decommissioned main influent line that went from the Pitts Rd. lift station to the lift station at the Vince Bayou WWTP would cross the approximate location where we observed the seep.

October 27, 2009:

Mr. Rushanan and Ms. Guynn met with Dr. Dayananda, Mr. Norman Lily, and Mr. Rick Helton with the City of Pasadena (aka the city) at the seep site on the bank of Vince Bayou. Ms. Guynn showed them the diagrams and Dr. Dayananda agreed it was possible that it could be the pipe from the old Vince Bayou WWTP. No one present knew anything about the pipe or how it may have been abandoned so many years ago. No conclusions could be made until further investigation was conducted. The city representatives agreed that the diagram would put the pipe in the same approximate location as the seep. Mr. Rushanan departed to attend an unrelated issue shortly thereafter.

The discharge was clearly still occurring at a rate of approximately 5-10 GPM and was visibly black in color distinguishing it from the surrounding water of Vince Bayou. It was clear that a camera could not be used to explore the discharge point as there was no clear pipe or hole. Preliminary probing with 3ft and 6ft probes was conducted and no pipes were immediately felt or determined, though some voids were found. One probe hole actually acted as an additional conduit and some of the discharge diverted to go through it. It appeared like an eruption indicating that the discharge must be under some pressure. Mr. Helton determined that we would have to dig to find the source of the seep. To this end, the city brought in some heavy equipment. The city contacted One-call (pipeline locator service used before digging) who sent a representative out and cleared the area. Denise Hall with EPH was contacted in order to get permission to dig from Harris County Flood Control (HCFC). Ms. Hall contacted Curtis Brom and Rick Weber with HCFC. Mr. Weber granted permission to excavate as long as the bank was restored and an EPH employee stood by. Ms. Guynn asked Mr. Helton to contact Mr. Brom directly (by telephone) to assure permission to dig and discuss any specifics.

The excavation began at approximately 9:30 AM (refer to photos on file for documentation of excavation). The first of the excavated soil was used to make a coffer dam to prevent further discharge to Vince Bayou. A 200 GPM capacity pump was used to divert the discharged water to the city's wastewater collection system via a manhole approximately 130 ft. away. Of note was the appearance of the soils being excavated. There was a clear delineation in the appearance of the soils. The surface soil and soil further away from the seep had a tan, sandy appearance. The soil that appeared to be affected by the seep was black and oily with a strong, sour hydrocarbon odor. Of the soil excavated, approximately 85% appeared to be latter type. The excavation progressed slowly as the area was probed and checked repeatedly. The deeper the excavation progressed, the more we observed that the flow rate increased. At a depth of approximately 6ft., a structure was found. At this point, the flow rate equaled the capacity of the pump,

approximately 200 GPM. The excavation was approximately 6ft. deep X 6 ft. long X 3 ft wide. The pump was turned off and the crew went to lunch for an hour.

At approximately 10:00 AM, Ms. Hall arrived at the site and was filled in on activities thus far by Ms. Guynn. Ms. Hall commented on the foul odor she described as sour, sulfur, amine-like being generated by the discharge and described it as being similar to that of the MCC facility across the street (W. Richey). It should be noted at this point that the wind was out of the Northwest at 5-10 MPH placing the location of the excavation downwind of the east side of the MCC facility. The site was subject to strong odors from the discharge/excavated soil and from the MCC facility. It was a very unpleasant situation that led to complaints of headaches and eye irritation from Ms. Guynn and other persons on the site. Rock Owens and Laura Cahill with the County Attorney's office arrived and were filled in on the situation. They reviewed the diagrams with Ms. Hall and looked at the excavation which had filled with the discharged liquid (since the pumps were still off). Ms. Hall and the attorneys departed shortly after the work crew returned from lunch.

The excavation was pumped out and the pump kept operating. Special care was taken uncovering the structure identified before lunch. The structure uncovered was a 24 inch, ribbed, concrete, pipe that had an approximately 12 inch by 4 inch break. The discharge was originating directly from the pipe at an estimated rate of 200 GPM. The estimated rate was based on the capacity of the pump which was just keeping up with diverting the discharge. The alignment of the pipe was from the NNE to the SSW within the hole. Doing a visual sighting straight along the pipe in both directions, we observed the City of Pasadena Pitts Rd lift station to the SSW with a manhole in between. To the NNE was the MCC facility, more particularly, the recirculation lift station on the east side of the plant. Suspicions that the pipe observed in the hole and the pipe identified in the diagram was one and the same became very strong at this point. The city called in a camera crew and checked the manhole on the south side of Vince Bayou where the pipe appeared to go. They reported that they found a plugged line consistent with the pipe pretty deep in the manhole. The city also excavated a second location approximately 15 to 20 ft "upstream" of the discharge location and found that the pipe changed to a 24 inch clay pipe. The clay pipe is consistent with standard sewer line construction practices in the 1950's and early 1960's. Ms. Carrion and Ms. Pentecost (TCEQ) collected samples from the discharging pipe at approximately 1:00 PM. The TCEQ analytical results may be found in Attachment G.

Concurrent with activities described in the above paragraph, Investigator Al Rushanan, Wastewater Specialist John Emerson, and Engineer Mike Scanlan (consultant hired by Harris County Attorney's

Office) proceeded to the east side of the MCC facility where they contacted Jhonaton Lara and Louis Baca, employees of USOR who work at MCC. Mr. Baca and Mr. Lara likewise visited the excavation site to observe the broken pipe and second excavation. Activities conducted by Mr. Scanlan will be contained in his own report and are not part of this report or investigation. Between 1:00 PM and 2:00 PM, Mr. Emerson proceeded to collect samples from the several vessels on the east side of the MCC plant specifically, the east and west digesters and the east and west clarifiers. Between 3:00 PM and 4:00 PM, Mr. Rushanan collected samples from the discharge at the excavation site and from a manhole on the east side of MCC on the north side near the old digesters. Mr. Emerson later placed dye in this same manhole to determine its destination of the material flowing through it. Analytical results for these samples may be found in Attachment F. At approximately 2:15 PM, Mr. Rushanan and Mr. Emerson both described the water in these vessels as being black, "septic", and having a really strong, foul odor. Mr. Rushanan relayed a request to Mr. Baca and Mr. Louis from the city representatives asking them to pump down the level of the recirculation lift station in order to reveal any pipes. The suspected source of the discharge at this point was the recirculation lift station; however, the lift station was full to within approximately 6 ft. of the surface level and piping, etc. was not visible. Mr. Baca and Mr. Louis agreed and vacuum trucks were brought from the USOR facility at 400 N. Richey to begin pumping the station down.

An attempt was made to locate the manhole (located on MCC property) depicted on the old WWTP diagram. Based on the approximate distance of the manhole from the still existing foundation of an old building also depicted in the diagram, it was determined that it was most likely located under approximately 10 feet of backfill and the facility's current driveway which were added to the facility at a much later date. Any attempt to locate the manhole would require extensive excavation and damage the driveway. A decision was made not to do this.

Ms. Guynn, Ms. Hall, the city representatives and the TCEQ persons were present when the lift station, which contained water similar to the other vessels, was pumped down enough (approximately 10 ft.) that a 15 inch pipe exiting the south wall was revealed. A short time (within 15 minutes) after the water in the lift station was pumped down below the pipe, it was documented that the discharge from the broken pipe in the excavation was reduced to a trickle of approximately 2-3 GPM. This was very convincing evidence that the source of the discharge was the lift station at the MCC facility and that the pipe was the pipe depicted as "abandoned" in early diagrams of the facility. Emergency Response Specialist Craig Hill and the TCEQ investigators collected samples from the lift station at approximately 5:40 PM. Analytical results for the EPH samples may be found in Attachment F. The TCEQ analytical result may be found in

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Attachment G. City employees at the direction of Mr. Helton used a camera to look back in the pipe (the camera was not inserted in the pipe). Ms. Guynn watched the screen with the operator and observed that the pipe appeared fairly clear for a distance of approximately 25 ft. She also confirmed that the pipe proceeded in the SSW direction toward the discharge point. The investigation was suspended due to the lateness of the day. We agreed to meet back at the sites on the following day to continue the investigation. The city agreed to monitor the pump and by pass any collected discharge as necessary during the night.

October 28, 2009:

Ms. Guynn arrived at the site at approximately 7:00 AM and observed that the discharge from the broken pipe remained at a trickle (see photos on file). Furthermore, the water that was coming out was a lot clearer in color. She also observed that the pipe contained a large amount of a sludge-like material. So much so that it appeared to have only a small space open near the top of the pipe. After further discussions with Mr. Lily and Mr. Helton, it was concluded that the water now being discharged by the pipe was most likely a result of groundwater or stormwater infiltration through cracks along its route. Ms. Guynn proceeded to the MCC facility where she contacted Mr. Lara. She observed that the lift station had been pumped almost completely down (approximately 20 ft.) revealing eight pipes leading into it from all sides. Only the 15 inch pipe enters the lift station from the south side. Mr. Lara stated that the dye that Mr. Emerson had placed in the manhole (see above) had made it to the lift station. The water was so black it was impossible to see any dye at this time but Mr. Lara assured me that it had been there the evening before and that they had pumped additional water from the lift station since then. Ms. Guynn observed additional material pumped from the lift station and asked Mr. Lara where it was going. He stated that the material was being taken to USOR.

By approximately 9:00 AM, representatives from various agencies and from USOR had gathered either on the east side of the MCC facility or at the excavation site. This included Ms. Guynn (EPH), Ms. Hall (EPH), Gary Fogarty (TCEQ), Bob Brown (USOR), Mr. Lily (Pasadena), Mr. Helton (Pasadena), Mr. Lara (USOR/MCC), Mr. Baca (USOR), and Mr. Dayananda (Pasadena). Ms. Guynn and Ms. Hall spoke with a gentleman named Greg Jallowy with Severn Trent Services. Severn Trent Services operates the City of Pasadena's WWTPs including the new Vince Bayou Plant. Mr. Jallowy informed us that he had worked at the old Vince Bayou WWTP (now MCC) from approximately 1982 until 1988 and again from 1994 until 2004 when it was shut down. He was able to tell us, to the best of his knowledge, which pipes in the lift station went to what. Mr. Lara used a tape measure to measure the depth and size of the pipes. The diagram below describes what was measured and the alleged source:

Size	Location	Source
6 inches	West wall approx. 10 ft. from top	Belt press area
12 inches	West wall approx. 13 ft. from top	Sand filter, w. clarifier, w. digester
8 inches	West wall approx. 14 ft. from top	Chlorine contact chamber
3 X 6inch pipe	North wall approx. 5ft. from top	Dead pipes?
8 inches	East wall approx. 14 ft. from top	e. clarifier, e. digester
15 inches	South wall approx. 10 ft. from top	Gravity thickener (final clarifier)?

Mr. Jalowy confirmed that the lift station had once been used as a headworks (location where influent is received into the plant) and stated that it had been used for recirculation when he was an operator at the WWTP.

It was decided that a smoke test would be conducted on the pipe. City employees shored the excavation site and prepared the area for the test. Ms. Guynn and several others waited at the MCC site. Two attempts were made to get smoke through the pipe. Both were unsuccessful. Mr. Helton and Mr. Lily stated that they felt the lack of success was due to the pipe being obstructed by sludge and quite possibly unobserved cave-ins. It was then decided that the city would try to jetrod the pipe beginning at the excavation site. The jetrod was inserted and travelled approximately 200 ft. Soundings taken with probes determined that the jetrod had met an obstruction below the entrance driveway of MCC approximately 5-10 feet west of Richey Rd. This spot was marked with white paint. Several attempts to retrieve the jetrod failed and it had to be abandoned in the pipe. A second jet rod rig was brought in and the process was repeated by inserting the jetrod into the 15 inch pipe at the MCC lift station. This time, dye was added to the water used with the jetrod and a person assigned to watch the discharge point. After insertion, the jetrod met an obstruction after traveling approximately 100-125 ft. The hose on the jet rod was painted to measure the length then withdrawn from the pipe. The jet rod and hose were then laid out above ground in the same direction as the pipe and the stopping spot was painted/marked. We noted that this location was approximately 2 feet short of the mark made from the other side and described above.

The results of the jetrodding along with the direction of the pipe, characteristics of the waste being discharged (similarity to waste observed at MCC), the reduction in flow when the pipe at MCC was exposed, and the old diagrams substantiate that the source of the unauthorized discharge was MCC. Based on this information, Ms. Guynn and Ms. Hall requested that Mr. Lara, and Mr. Baca see to it that the pipe

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at the south wall of the lift station was plugged and that any other pipes that may connect to this pipe be plugged. We agreed that the plugs could be mechanical plugs. The gentlemen stated that they would do this and Mr. Lara was on the telephone speaking to someone about it before we left. The city representatives stated that they would also plug both ends of the broken pipe at the discharge site with mechanical and concrete plugs before filling the excavation with clean soil. They planned to dispose of the potentially contaminated soil separately.

October 29, 2009:

John Emerson verified that the pipe had been plugged by MCC and by the city (see photos).

October 30, 2009:

Ms. Guynn met with Mr. Lara and Mr. Kaiser at the east side of the MCC facility. It had rained heavily earlier that morning and the power was out at the facility was out. Mr. Kaiser departed to get some parts to repair the power problem. Ms. Guynn and Mr. Lara proceeded to the recirculation lift station. Due to the heavy rain, the liquid level in the lift station was within 1- 2 ft. of the surface (top). Ms. Guynn was unable to see if the pipe was plugged as it was submerged, however, she did observe bags of concrete, ropes and other equipment near the lift station to indicate that some work had been done. Mr. Lara stated that they had plugged the line with a mechanical plug then used concrete. He also commented that the discharge might explain why they never had to pump out the lift station before and why the water level had dropped without assistance.

Ms. Guynn also observed that the final clarifier had only approximately 3 inches of freeboard and was concerned. Mr. Kaiser, who had returned to the site, informed her that he would get the pumps going as soon as he got the electricity back on. He stated that it would be working within ½ hour.

November 6, 2009:

Analytical data (see Attachment F) confirmed that the samples collected from the discharge point at Vince Bayou and the samples collected from the recirculation lift station and various tanks at the MCC facility were substantially similar. This further confirmed that MCC was the source of the unauthorized discharge. Further examination of photos of the lift station taken on September 16, 2009 by Ms. Guynn, on September 22, by Ms. Hall, and on September 30, 2009 by Mr. Jerry Caraviotis found that the liquid level in the lift station has fluctuated from being full to being at the level of the south pipe. This indicates there may have been previous discharges and gives evidence to the statement by Mr. Lara that the water level had dropped without assistance.

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Conclusion:

MCC Recycling LLP discharged industrial wastewater without authorization on October 23, 24, and 27, 2009. This constitutes a violation of the Texas Water Code Chapter 26.121(a)(1) which states: Except as authorized by the commission, no person may: discharge sewage, municipal waste, recreational waste, agricultural waste, or industrial waste into or adjacent to any water in the state. It also represents a violation Provision No. 1 of Temporary Injunction 2009-32636 which states, "Immediately cease unauthorized discharges from the sites at 200 North Richey Road and 400 North Richey Road."

NPI given to subject: ☐ Yes

☒ No

If no, comment:

NPI left at site: ☐ Yes

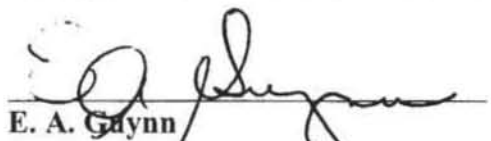
☒ No

If no, why:


Reinspection Warranted: ☐ Yes

☒ No

Target Date:



E. A. Gaynn

Sr. Coordinator - Training


Denise Hall

Denise Hall

Compliance Coordinator - Water


Al Rushanan

Investigator


John Emerson

John Emerson

Waste Water Specialist

EAG/vb

Attachment

MCC Recycling LLP
October 27, 2009
Attachments

Attachment A – HCAD Facet Map 5755B

Attachment B – EPH Sample Results October 23, 2009

Attachment C – Rainfall totals 10/25/09 – 10/27/09

Attachment D – Vince Bayou WWTP Schematics CD

Attachment E – Vince Bayou Schematics print outs

Attachment F – EPH Sample Results 10-27-09

Attachment G – TCEQ Sample Results 10-27-09

ATTACHMENT A

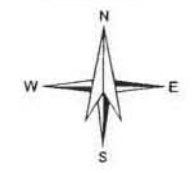
JCC Recycling LLY
200 N Richey
10-27-09

5756D10

Harris County Appraisal District



0 100 200
PUBLICATION DATE:
5/27/2009



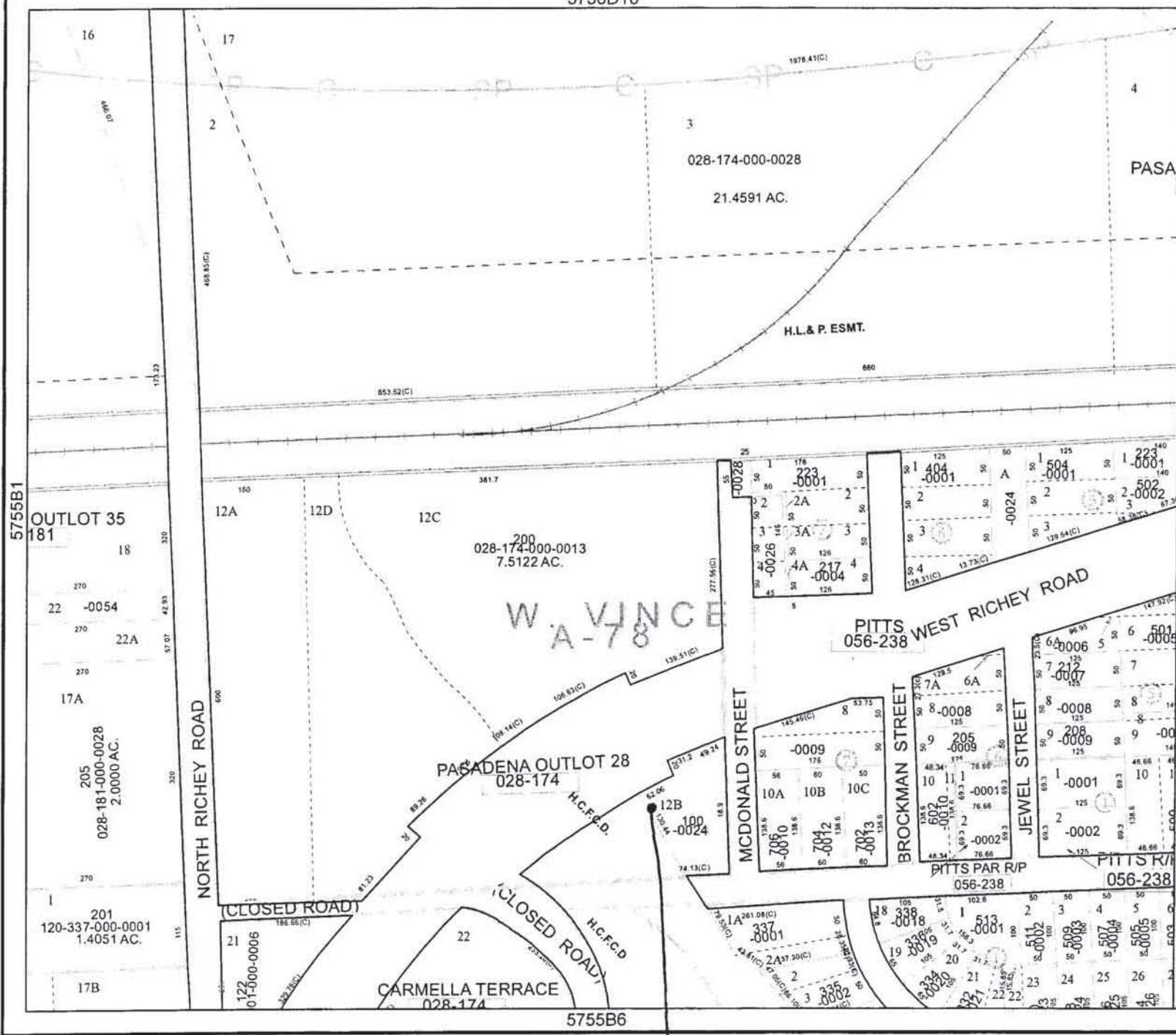
MAP LOCATION



FACET 5755B

1	2	3	4
5	6	7	8
9	10	11	12

5755B1



5755B6

Discharge location

ATTACHMENT B

Harris County
HCPHES
Public Health & Environmental Services
Environmental Public Health Division

SAMPLE DATA

MCC Recycling c/o U.S. Oil Recovery L.P.
400 N. Richey
Pasadena, TX 77506
ATTN: Klaus Genssler
SAMPLE LOCATION: South side of bridge, east side of bayou

ID NO.: 15233
SAMPLE NO.: NA-2608
OUTFALL: NA
SAMPLE DATE: 10/23/09
SAMPLE TIME: 3:05 PM
RUN NO.: 2009J23

SAMPLE AMOUNT 1x1qt-P 1x500ml-P 1x250ml-P 4x40m-GP

APPEARANCE: Black, slight chemical odor

SAMPLED BY: Al V. Rushanan

VN SENT: _____

PLANT TYPE: NON PERMITTED SAMPLE TYPE: Grab

COPY TO: _____

FIELD MEASUREMENTS				
PARAMETER mg/l (except as noted)	DETERMINED VALUE			
pH	6.5			
Flow (MGD)	~5 gpm			
LABORATORY ANALYSIS				
PARAMETER	ANALYTICAL RESULTS			SPIKE
	ORIGINAL	DUPLICATE	RECHECK	%
Total Organic Carbon	1,806			
Total Petroleum Hydrocarbons	*			
Volatile Organics - Water	**			
SAMPLE COMMENTS				
* C6-C12: 66.5 mg/l				
>C12-C28: 205 mg/l				
>28-C35: 46.2 mg/l				
>C35: 12.4 mg/l				
TOTAL 330.1 mg/l				
TPH profile detected with predominate hydrocarbon species in the C8-C38 range.				
Concentration: 330.1 mg/l				
**See attachment.				

APPROVED DATE

APPROVED BY

11/4/09
Christy
LABORATORY DIRECTOR

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MCC RECYCLING

CUSTOMER MCC RECYCLING PERMIT NA-2608

LAB E P H ID # 7583 MISC RUN # 09 J 23

Matrix: (soil/water) WATER Lab Sample ID: UNKNOWN, NA-26

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: V102709H.D

Level: (low/med) LOW Date Received: 10/23/2009

% Moisture: not dec. Date Analyzed: 10/27/2009

GC Column: DB-624 ID: 0.32 (mm) Dilution Factor: 10.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg)	UG/L	Q
75-71-8	Dichlorodifluoromethane	50	U	U
74-87-3	Chloromethane	50	U	U
75-01-4	Vinyl Chloride	50	U	U
74-83-9	Bromomethane	50	U	U
75-00-3	Chloroethane	50	U	U
75-69-4	Trichlorofluoromethane	50	U	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroetha	50	U	U
75-35-4	1,1-Dichloroethene	50	U	U
67-64-1	Acetone	7100	D	D
75-15-0	Carbon Disulfide	57	D	D
79-20-9	Methyl acetate	50	U	U
75-09-2	Methylene chloride	50	U	U
1634-04-4	MTBE	100	U	U
156-60-5	trans-1,2-Dichloroethene	50	U	U
75-34-3	1,1-Dichloroethane	50	U	U
156-59-2	cis-1,2-Dichloroethene	50	U	U
78-93-3	2-Butanone	780	D	D
67-66-3	Chloroform	50	U	U
71-55-6	1,1,1-Trichloroethane	50	U	U
1110-82-7	Cyclohexane	50	U	U
56-23-5	Carbon Tetrachloride	50	U	U
107-06-2	1,2-Dichloroethane	53	D	D
71-43-2	Benzene	87	D	D
79-01-6	Trichloroethene	50	U	U
78-87-5	1,2-Dichloropropane	50	U	U
108-87-2	Methylcyclohexane	67	D	D
75-27-4	Bromodichloromethane	50	U	U
10061-01-5	cis-1,3-Dichloropropene	50	U	U
108-10-1	4-Methyl-2-pentanone (MIBK)	450	D	D
108-88-3	Toluene	100	D	D
10061-02-6	trans-1,3-Dichloropropene	50	U	U
79-00-5	1,1,2-Trichloroethane	50	U	U
591-78-6	2-Hexanone	50	U	U
127-18-4	Tetrachloroethene	50	U	U
124-48-1	Dibromochloromethane	50	U	U
106-93-4	1,2-Dibromoethane	50	U	U
108-90-7	Chlorobenzene	50	U	U
100-41-4	Ethylbenzene	150	D	D
108383	m/p Xylene	630	D	D

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MCC RECYCLING

CUSTOMER MCC RECYCLING PERMIT NA-2608

LAB E P H ID # 7583 MISC RUN # 09 J 23

Matrix: (soil/water) WATER Lab Sample ID: UNKNOWN, NA-26

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: V102709H.D

Level: (low/med) LOW Date Received: 10/23/2009

% Moisture: not dec. Date Analyzed: 10/27/2009

GC Column: DB-624 ID: 0.32 (mm) Dilution Factor: 10.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

95476	o Xylene	460	D
100-42-5	Styrene	50	U
75-25-2	Bromoform	50	U
98-82-8	Isopropylbenzene	50	U
79-34-5	1,1,2,2-Tetrachloroethane	50	U
541-73-1	1,3-Dichlorobenzene	50	U
106-46-7	1,4-Dichlorobenzene	50	U
95-50-1	1,2-Dichlorobenzene	50	U
96-12-8	1,2-Dibromo-3-Chloropropane	50	U
120-82-1	1,2,4-Trichlorobenzene	50	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

MCC RECYCLING

CUSTOMER MCC RECYCLING PERMIT NA-2608

LAB E P H ID # 7583 MISC RUN # 09 J 23

Matrix: (soil/water) WATER Lab Sample ID: UNKNOWN, NA-26

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: V102709H.D

Level: (low/med) LOW Date Received: 10/23/2009

% Moisture: not dec. Date Analyzed: 10/27/2009

GC Column: DB-624 ID: 0.32 (mm) Dilution Factor: 10.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/L

Number TICs found: 25

CAS NO.	COMPOUND NAME	RT	EST. CONC.	Q
1.	unknown	18.68	740	JD
2.	unknown	19.47	1300	JD
3. 95	Benzene, 1,2,4-trimethyl-	20.33	620	JD
4. 000526-73-8	Benzene, 1,2,3-trimethyl-	21.21	760	JND
5. 001074-43-7	Benzene, 1-methyl-3-propyl-	21.59	1700	JND
6. 062338-57-2	1,4-Cyclohexadiene, 3-ethenyl-1,	21.70	2500	JND
7.	unknown	21.78	950	JD
8. 001074-55-1	Benzene, 1-methyl-4-propyl-	22.20	740	JND
9. 001758-88-9	Benzene, 2-ethyl-1,4-dimethyl-	22.37	1300	JND
10. 000535-77-3	Benzene, 1-methyl-3-(1-methyleth	22.45	1300	JND
11. 000934-80-5	Benzene, 4-ethyl-1,2-dimethyl-	22.62	2800	JND
12. 001595-16-0	Benzene, 1-methyl-4-(1-methylpr	22.99	540	JND
13. 001758-88-9	Benzene, 2-ethyl-1,4-dimethyl-	23.47	960	JND
14. 000488-23-3	Benzene, 1,2,3,4-tetramethyl-	23.70	1800	JND
15. 000488-23-3	Benzene, 1,2,3,4-tetramethyl-	23.86	3000	JND
16.	unknown	24.01	620	JD
17. 055669-88-0	Benzene, 1,4-dimethyl-2-(2-methy	24.13	440	JND
18.	unknown	24.51	490	JD
19. 000874-35-1	1H-Indene, 2,3-dihydro-5-methyl-	24.72	2000	JND
20.	unknown	24.92	500	JD
21. 000095-93-2	Benzene, 1,2,4,5-tetramethyl-	25.18	2000	JND
22.	unknown	25.42	490	JD
23. 004218-48-8	Benzene, 1-ethyl-4-(1-methylethyl	26.40	800	JND
24. 004218-48-8	Benzene, 1-ethyl-4-(1-methylethyl	26.91	510	JND
25.	unknown	28.66	560	JD

HARRIS COUNTY POLLUTION CONTROL DIVISION

UNPERMITTED SAMPLE/CUSTODY LOG RECORD

DATE: 10/23/09
TIME: 3:05 AM/PMSAMPLENAME: UNKNOWN
SITE/ADDRESS: VINCE BAYOU at W. RICHEY, EAST CORNERSAMPLE LOCATION: SOUTH SIDE OF BRIDGE, EAST SIDE OF BAYOUAMOUNT COLLECTED: 1qt. + 500ml + 250ml + 4x40ml FLOW: ~ 5 gpmSAMPLE DESCRIPTION: BLACK, slight chemical odorFIELD TESTS PERFORMED: pH 6.5SAMPLED BY: DL RuckmanBriefly summarize the sampling episode including suspected contaminants and attach a copy of the complaint, ROTC, etc.: seepage from bank of bayou - possible pipeline leak.

Inform Lab Director of special samples: _____

ANALYSES REQUESTEDWET LAB

- | | | |
|---|---|--|
| <input type="checkbox"/> Fecal Coliform/Fecal Streptococcus | <input type="checkbox"/> TR | <input checked="" type="checkbox"/> TOC/TIC |
| <input checked="" type="checkbox"/> BOD/CBOD | <input type="checkbox"/> TDS | <input checked="" type="checkbox"/> Metals (specify) _____ |
| <input checked="" type="checkbox"/> Ammonia Nitrogen | <input type="checkbox"/> TSS | <input type="checkbox"/> Fluoride |
| <input type="checkbox"/> pH | <input type="checkbox"/> Sulfide | <input type="checkbox"/> Detergent |
| <input type="checkbox"/> Chloride | <input checked="" type="checkbox"/> COD | <input type="checkbox"/> Conductivity |

c/s
10/27/09
INSTRUMENTATION

- | | | |
|---|---|---|
| <input type="checkbox"/> FID Screen | <input type="checkbox"/> GC/MS Screen | <input type="checkbox"/> BTEX |
| <input type="checkbox"/> Profile Comparison | <input type="checkbox"/> Oil & Grease (soil Only) | <input type="checkbox"/> Specific Analyte |
| <input type="checkbox"/> Other Analysis (explain) | <input checked="" type="checkbox"/> TPH | <input checked="" type="checkbox"/> VOAW |
| | | <input checked="" type="checkbox"/> SV |

FIELD CUSTODYThis sample was placed behind a locked door in the Laboratory after-hours refrigerator: YES NO
BY: _____ DATE: _____ TIME: _____ AM/PMLABORATORY CUSTODYACCEPTED BY: amr
DATE: 10/23/09 RUN NO.: 2009J23 TIME: 3:45 AM/PM

c/s

NA
2608

ENVIRONMENTAL PUBLIC HEALTH DIVISION LABORATORY
HARRIS COUNTY PUBLIC HEALTH ENVIRONMENTAL SERVICES

Sampling / Custody Nonconformance Report

ID AR 10/23/09 Date 10/28/09
NC Completed By Morton, Vana Collected By Rushanan
Run Number(s) 2009J23 Number of Samples 1
Sample ID/ Location NA-2608
Nonconformance 1: Improper preservation
Nonconformance 2:
Nonconformance Comments Not enough preservation in containers. Added more preservation for Ammonia, Metals and TOC.

Analysis Request 1

Analysis Request 2

Analysis Request 3

Analysis Request 4

Corrective Action 1 Samples preserved by lab staff

Corrective Action 2

Corrective Action 3

Impact on Data 1

Impact on Data 2

Comments on Data Impact

Field Investigator _____

Sample Administrator Morton

QA/QC CB

Manager - Laboratory Services CB

Include With Report ☒

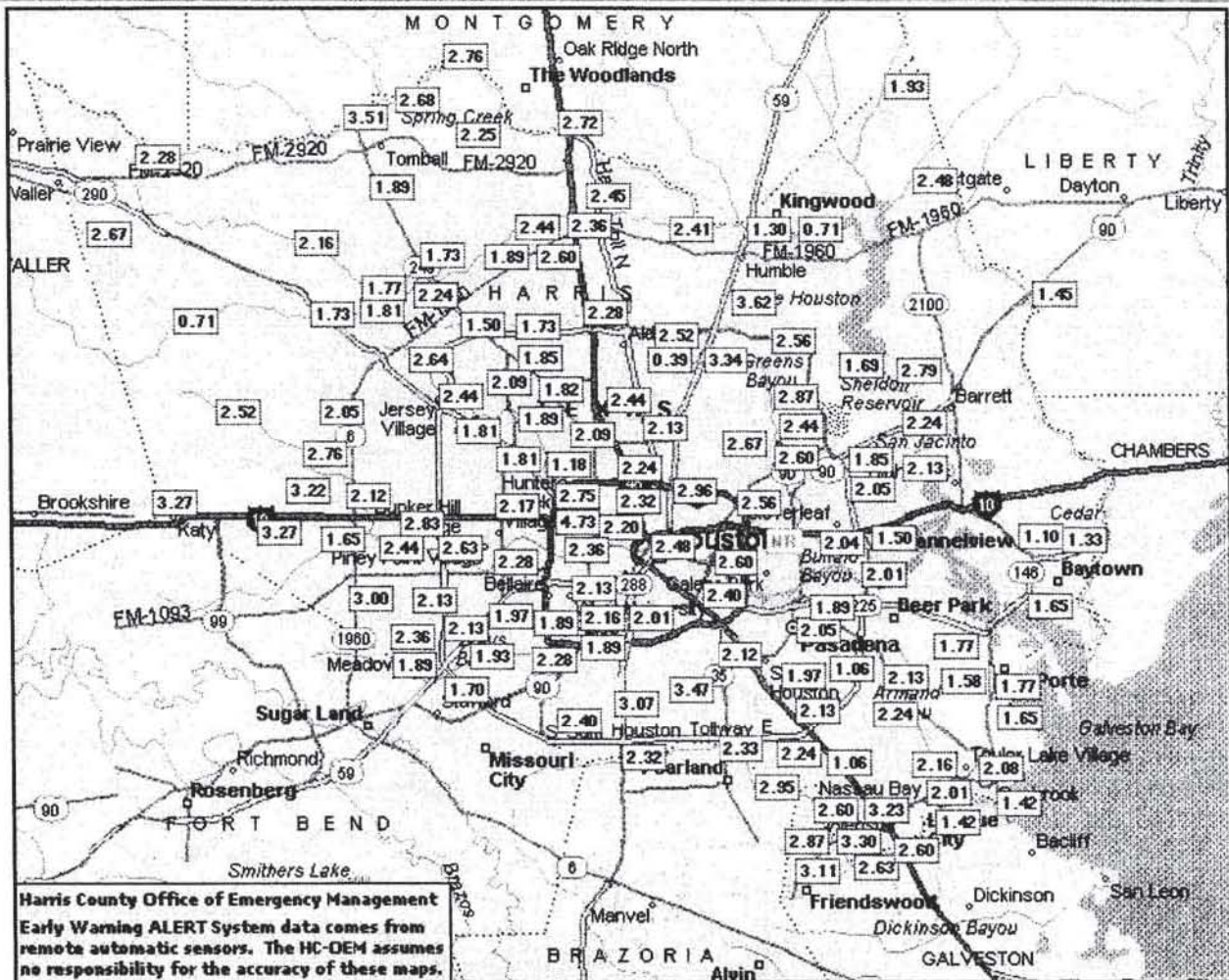
ATTACHMENT C



Harris County

Homeland Security & Emergency Management

Director of OHSEM
Harris County Judge
Ed Emmett
[Back to Home Page](#)



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These values represent rainfall totals for a duration of **2 days** through 10/27/09 12:49:09 PM

[Print Page](#)

Count back 2

day(s)

from 11/11/2009 12:49:50 PM

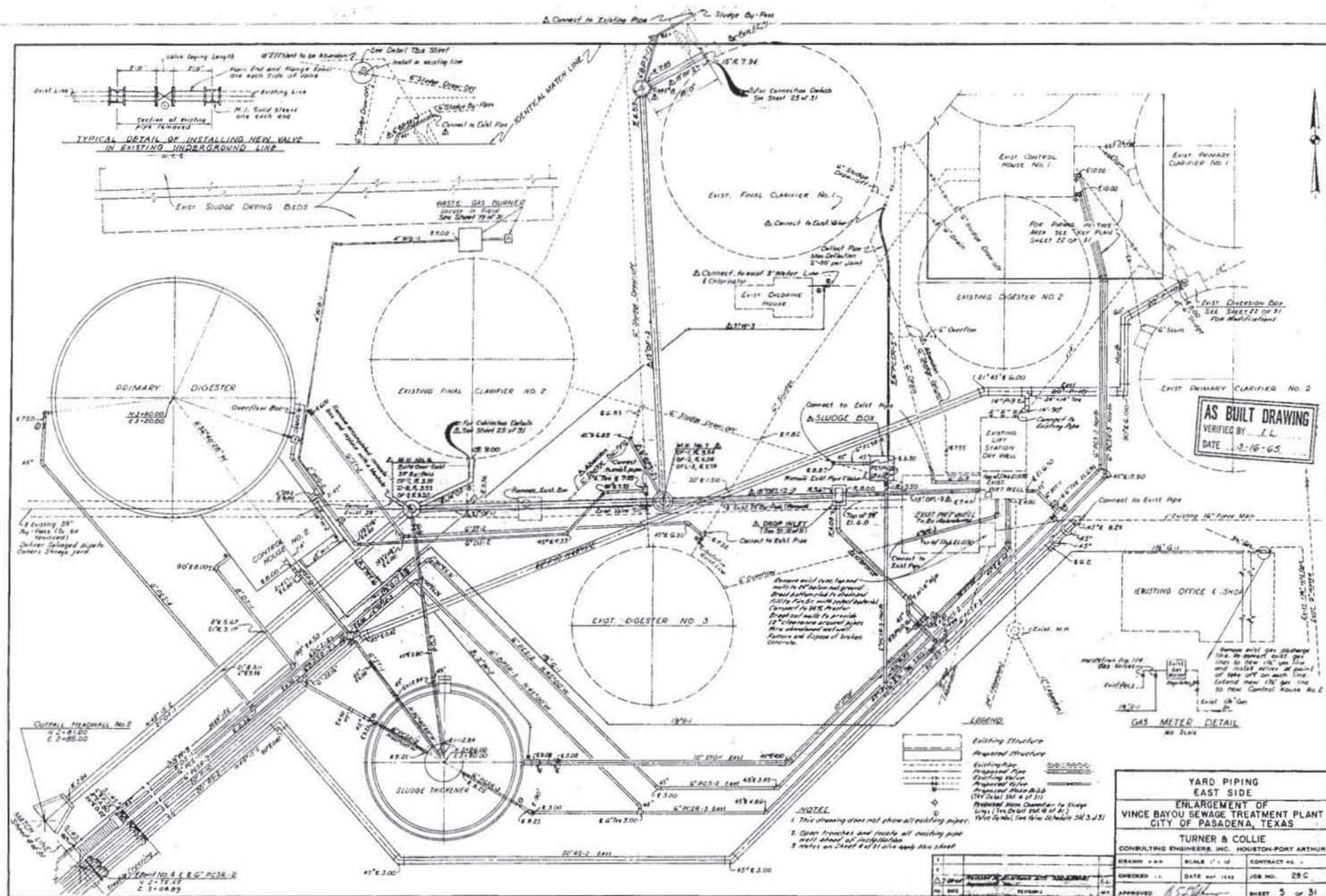
[Submit](#)

[Reset to Current Time](#)

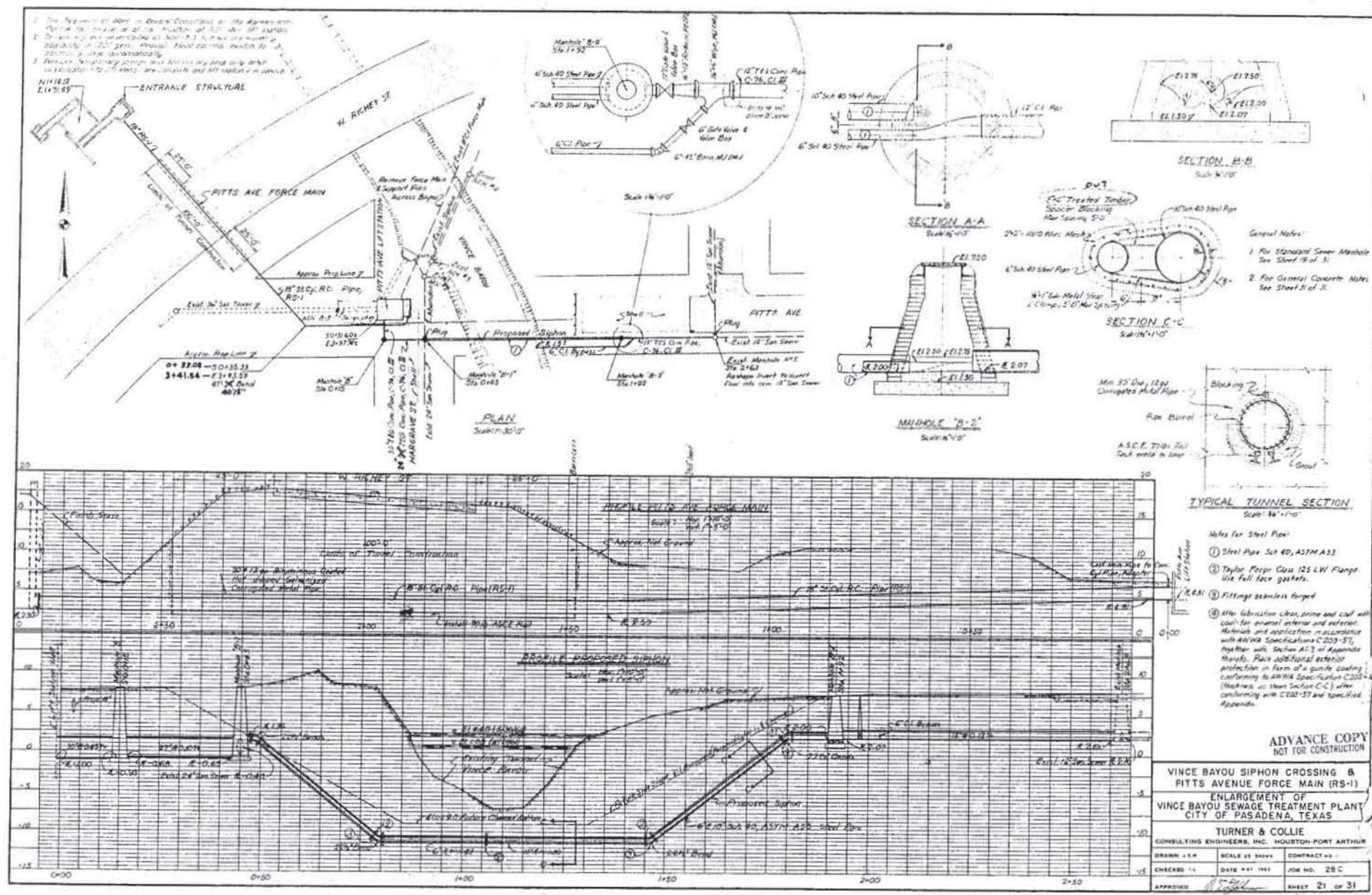
ATTACHMENT D

ATTACHMENT E

CC Reynolds LLP 200MCHCY 10-27-07



B-12-3-6



7-2-1-186

ATTACHMENT F

Harris County
HCPHES
Public Health & Environmental Services
Environmental Public Health Division

SAMPLE DATA

MCC Recycling c/o U.S. Oil Recovery L.P.
400 N. Richey
Pasadena, TX 77506
ATTN: Klaus Genssler
SAMPLE LOCATION: East digester

ID NO.: 15233
SAMPLE NO.: NA-2610
OUTFALL: NA
SAMPLE DATE: 10/27/09
SAMPLE TIME: 1:10 PM
RUN NO.: 2009J27

SAMPLE AMOUNT 1x1qt-P 1x500ml-P 1x250ml-P 1x40ml-GP 1x40ml-GP 1x40ml-GP

APPEARANCE: Black liquid

SAMPLED BY: John L. Emerson

VN SENT: _____

PLANT TYPE: NON PERMITTED SAMPLE TYPE: Grab

COPY TO: _____

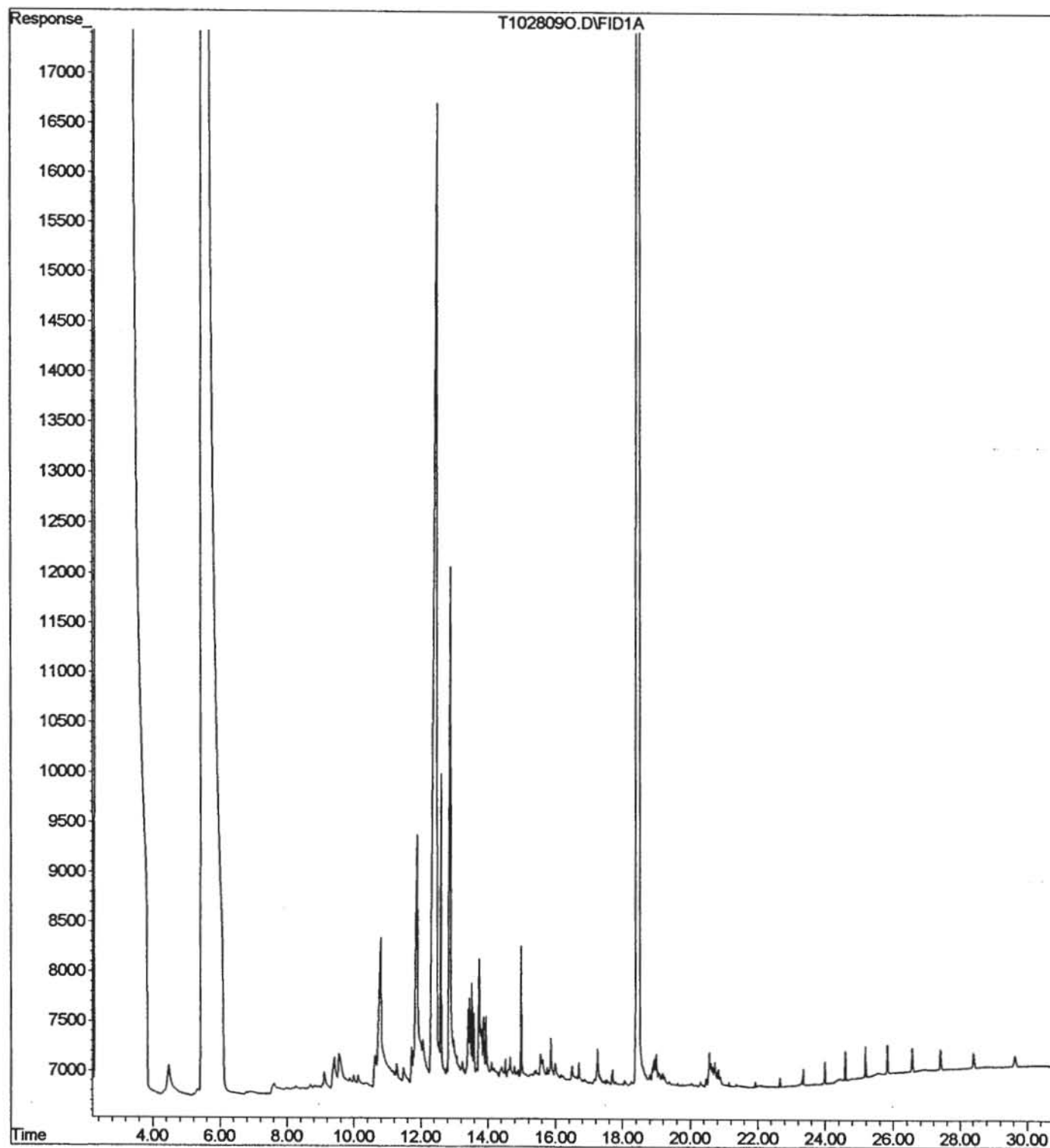
FIELD MEASUREMENTS				
PARAMETER mg/l (except as noted)	DETERMINED VALUE			
pH	7			
LABORATORY ANALYSIS				
PARAMETER	ANALYTICAL RESULTS			SPIKE
	ORIGINAL	DUPLICATE	RECHECK	%
Total Organic Carbon	2.928			
Car. Biochem. Oxy. Demand	4.455			
Ammonia Nitrogen	306.0			
Thallium	<0.020			
Aluminum	5.607			
(0.3) Arsenic	<0.020			
(0.2-0.3) Cadmium	<0.020			
(5.0) Chromium	<0.0125			
(2.0) Copper	<0.025			
(1.5) Lead	<0.020			
(3.0) Manganese	1.354			
(3.0) Nickel	0.154			
(6.0) Zinc	0.078			
(0.2) Silver	0.078			
(4.0) Barium	<0.200			
Beryllium	<0.005			
Antimony	<0.060			
(0.2) Selenium	0.024			
Total Petroleum Hydrocarbons	*			
Volatile Organics - Water	**			
SAMPLE COMMENTS				
* C6-C12: 8.87 mg/l >C12-C28: 3.56 mg/l TOTAL 12.53 mg/l TPH profile detected with predominate hydrocarbon species in the C10-C20 range. Concentration: 12.5 mg/l ** See attachemnt.				

APPROVED DATE

APPROVED BY

11/6/09
Chad B...
LABORATORY DIRECTOR

File : C:\HPCHEM\1\DATA\102809\T1028090.D
Operator : EBP
Acquired : 28 Oct 109 11:43 pm using AcqMethod FID1AA.M
Instrument : fid1
Sample Name: MCC RECYCLING, NA-2610
Misc Info : EAST DIGESTER
Vial Number: 15



1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EAST DIGESTER

CUSTOMER MCC RECYCLING PERMIT NA-2610

LAB E P H ID # 15233 MISC RUN # 09 J 27

Matrix: (soil/water) WATER Lab Sample ID: MCC RECYCLING,

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: V1028091.D

Level: (low/med) LOW Date Received: 10/27/2009

% Moisture: not dec. Date Analyzed: 10/28/2009

GC Column: DB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

75-71-8	Dichlorodifluoromethane	5	U
74-87-3	Chloromethane	5	U
75-01-4	Vinyl Chloride	5	U
74-83-9	Bromomethane	5	UL
75-00-3	Chloroethane	5	U
75-69-4	Trichlorofluoromethane	5	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroetha	5	U
75-35-4	1,1-Dichloroethene	5	U
67-64-1	Acetone	510	E
75-15-0	Carbon Disulfide	32	
79-20-9	Methyl acetate	20	
75-09-2	Methylene chloride	5	U
1634-04-4	MTBE	10	U
156-60-5	trans-1,2-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
156-59-2	cis-1,2-Dichloroethene	5	U
78-93-3	2-Butanone	200	E
67-66-3	Chloroform	5	U
71-55-6	1,1,1-Trichloroethane	5	U
1110-82-7	Cyclohexane	5	U
56-23-5	Carbon Tetrachloride	5	U
107-06-2	1,2-Dichloroethane	5	U
71-43-2	Benzene	5	U
79-01-6	Trichloroethene	5	U
78-87-5	1,2-Dichloropropane	5	U
108-87-2	Methylcyclohexane	5	U
75-27-4	Bromodichloromethane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
108-10-1	4-Methyl-2-pentanone (MIBK)	18	
108-88-3	Toluene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
79-00-5	1,1,2-Trichloroethane	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	5	U
124-48-1	Dibromochloromethane	5	U
106-93-4	1,2-Dibromoethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
108383	m/p Xylene	10	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EAST DIGESTER

CUSTOMER MCC RECYCLING PERMIT NA-2610

LAB E P H ID # 15233 MISC RUN # 09 J 27

Matrix: (soil/water) WATER Lab Sample ID: MCC RECYCLING,

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: V102809I.D

Level: (low/med) LOW Date Received: 10/27/2009

% Moisture: not dec. Date Analyzed: 10/28/2009

GC Column: DB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

95476	o Xylene	5	U
100-42-5	Styrene	5	U
75-25-2	Bromoform	5	U
98-82-8	Isopropylbenzene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
541-73-1	1,3-Dichlorobenzene	5	U
106-46-7	1,4-Dichlorobenzene	5	U
95-50-1	1,2-Dichlorobenzene	5	U
96-12-8	1,2-Dibromo-3-Chloropropane	5	U
120-82-1	1,2,4-Trichlorobenzene	5	U <i>H</i>

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

EAST DIGESTER

CUSTOMER MCC RECYCLING PERMIT NA-2610

LAB E P H ID # 15233 MISC RUN # 09 J 27

Matrix: (soil/water) WATER Lab Sample ID: MCC RECYCLING,

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: V102809I.D

Level: (low/med) LOW Date Received: 10/27/2009

% Moisture: not dec. Date Analyzed: 10/28/2009

GC Column: DB-624 ID: 0.32 (mm) Dilution Factor: 1.0

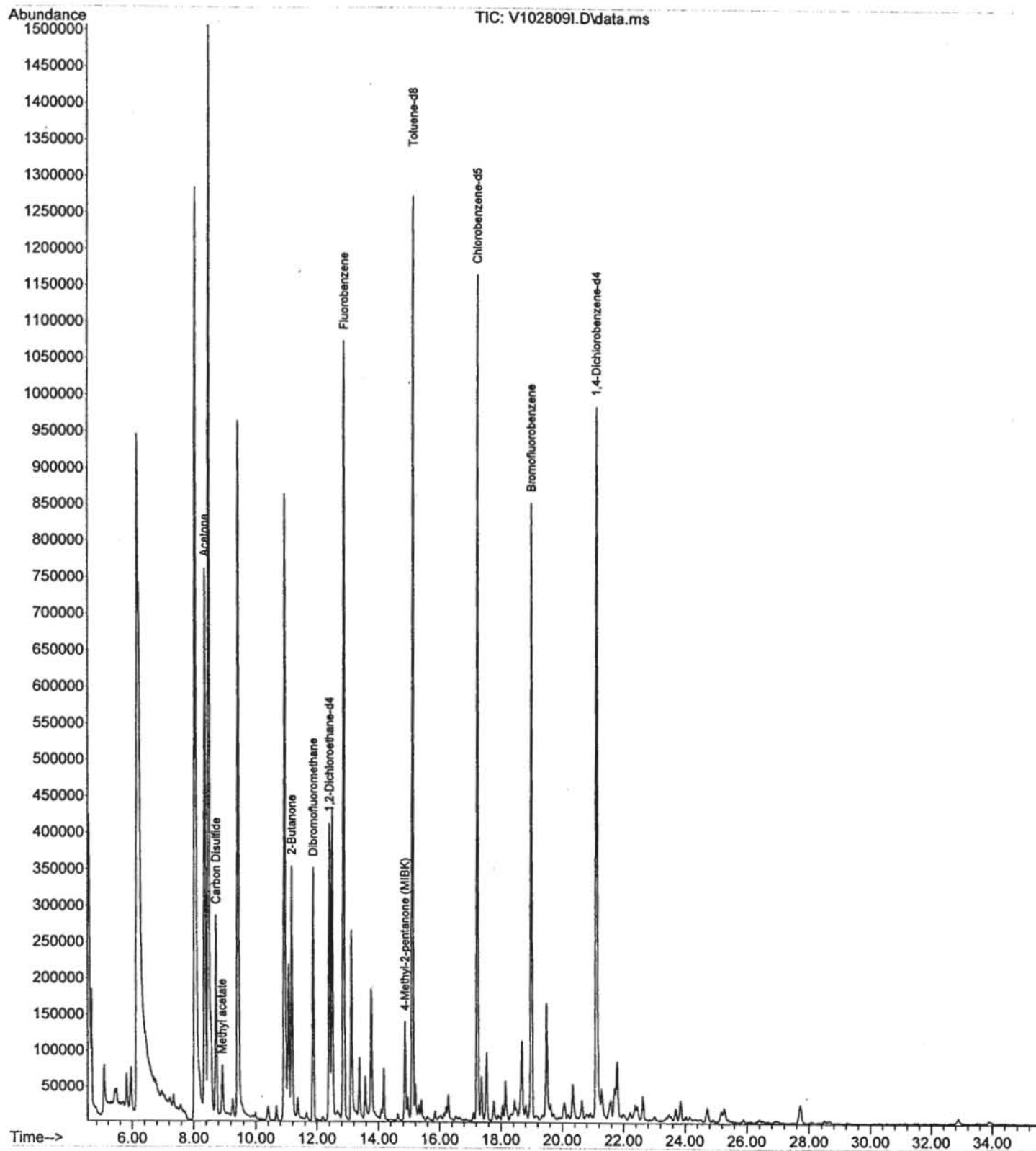
Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/LNumber TICs found: 12

CAS NO.	COMPOUND NAME	RT	EST. CONC.	Q
1. 000463-58-1	Carbonyl sulfide	4.62	6	JN
2. 000074-93-1	Methanethiol	6.16	52	JN
3. 000075-08-1	Ethanethiol	8.04	88	JN
4. 000075-18-3	Dimethyl sulfide	8.49	69	JN
5. 000075-33-2	2-Propanethiol	9.43	51	JN
6. 000107-03-9	1-Propanethiol	10.94	42	JN
7. 000624-89-5	Ethane, (methylthio)-	11.07	12	JN
8. 000513-53-1	2-Butanethiol	12.49	20	JN
9. 000071-36-3	1-Butanol	13.12	14	JN
10. 000109-79-5	1-Butanethiol	13.76	9	JN
11. 000098-82-8	Benzene, (1-methylethyl)-	18.68	6	JN
12. 001569-69-3	Cyclohexanethiol	19.48	8	JN

File : C:\msdchem\1\DATA\102809\V102809I.D
Operator : M. CANTU / R. VERASTEGUI
Acquired : 28 Oct 2009 2:36 pm using AcqMethod VOA.M
Instrument : VOA #1
Sample Name: MCC RECYCLING, NA-2610, ID 15233, 09 J 27
Misc Info : EAST DIGESTER
Vial Number: 27



Subject Information				Location/General Information				Requested Analysis				Matrix Codes			
Subject Name: MILL RECYCLING LLP				Site Name:								DW - Drinking Water			
Address: 200 N. RICHBY RD				Address: 200 N. RICHBY RD								WW - Water			
Contact Name: THOMAS KASIBER				Property Description: OIL RECYCLING FACILITY								SO - Soil			
Phone Number:				Suspected Contaminants:								SL - Sludge			
Sampler's Name: Tom Kasiber				Weather Conditions:								Liq - Liquid			
												Air - Air			
												SOL - Other Solid			
												OI - Oil			
												O - Other			
Sample #	Collection				# of bottles	Number of Preserved Bottles							Lab Use Only		
	Field ID/ Point of Collection	Date	Time	Sampled By		Matrix	HCl	NaOH	HNO3	H2SO4	NONE	NaHSO4		ICE	
1	PART DIGESTED	10/27/09	1101am	JLB	WW	/		/	/	/		/	00A		NA-2610
2	PART CLARIFIED	10/27/09	1120pm	JLB	WW	/		/	/	/		/	TPH		NA-2611
3	BEST CLARIFIED	10/27/09	1130pm	JLB	WW	/		/	/	/		/	CHOD		NA-2612
4	BEST DIGESTED	10/27/09	1140pm	JLB	WW	/		/	/	/		/	607 NH3		NA-2613
													METALS		
													TOL		
													SV		
Sample Information												Comments/Remarks			
Type of sample: <input checked="" type="checkbox"/> Grab <input type="checkbox"/> Composite <input type="checkbox"/> Direct <input checked="" type="checkbox"/> Indirect <input type="checkbox"/> Split Accompanied: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No DPRS: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No												POSSIBLE SOURCE INTO VINCE			
Field Tests Conducted/Results: #1 pH 7 #2 pH 8 #3 pH 7 #4 pH 5												May be via TRAP in PIPE.			
Sample Custody															
Relinquished by Sampler:				Date/Time: 10/27/09 3:15pm				Received By:				Date/Time: 10/27/09 3:15pm			
Relinquished by EPH:												Sample received with proper pH: * Yes No			
												Sample received on ice: Yes No			
RUN NO: 2009J27															

ENVIRONMENTAL PUBLIC HEALTH DIVISION LABORATORY
HARRIS COUNTY PUBLIC HEALTH ENVIRONMENTAL SERVICES

Sampling / Custody Nonconformance Report

ID JLE 10/27/09 Date 10/28/09
NC Completed By Morton, Vana Collected By Emerson
Run Number(s) 2009J27 Number of Samples 3
Sample ID/ Location NA-2610, NA-2611, NA-2612, NA-2613
Nonconformance 1: Improper preservation
Nonconformance 2:
Nonconformance Comments Not enough preservation in container. Added more preservative for Ammonia, Metals and TOC.

Analysis Request 1

Analysis Request 2

Analysis Request 3

Analysis Request 4

Corrective Action 1 Samples preserved by lab staff

Corrective Action 2

Corrective Action 3


Impact on Data 1

Impact on Data 2

Comments on Data Impact

Field Investigator _____

Sample Administrator 

QA/QC 

Manager - Laboratory Services 

Include With Report ☒

Harris County
HCPHES
Public Health & Environmental Services
Environmental Public Health Division

SAMPLE DATA

MCC Recycling c/o U.S. Oil Recovery L.P.
400 N. Richey
Pasadena, TX 77506
ATTN: Klaus Genssler
SAMPLE LOCATION: East Clarifier

ID NO.: 15233
SAMPLE NO.: NA-2611
OUTFALL: NA

SAMPLE DATE: 10/27/09
SAMPLE TIME: 1:20 PM

RUN NO.: 2009J27

SAMPLE AMOUNT 1x1qt-P 1x250ml-P 1x500ml-P 1x40ml-GP 1x40ml-GP 1x40ml-GP

APPEARANCE: Greenish black liquid

SAMPLED BY: John L. Emerson

VN SENT: _____

PLANT TYPE: NON PERMITTED SAMPLE TYPE: Grab

COPY TO: _____

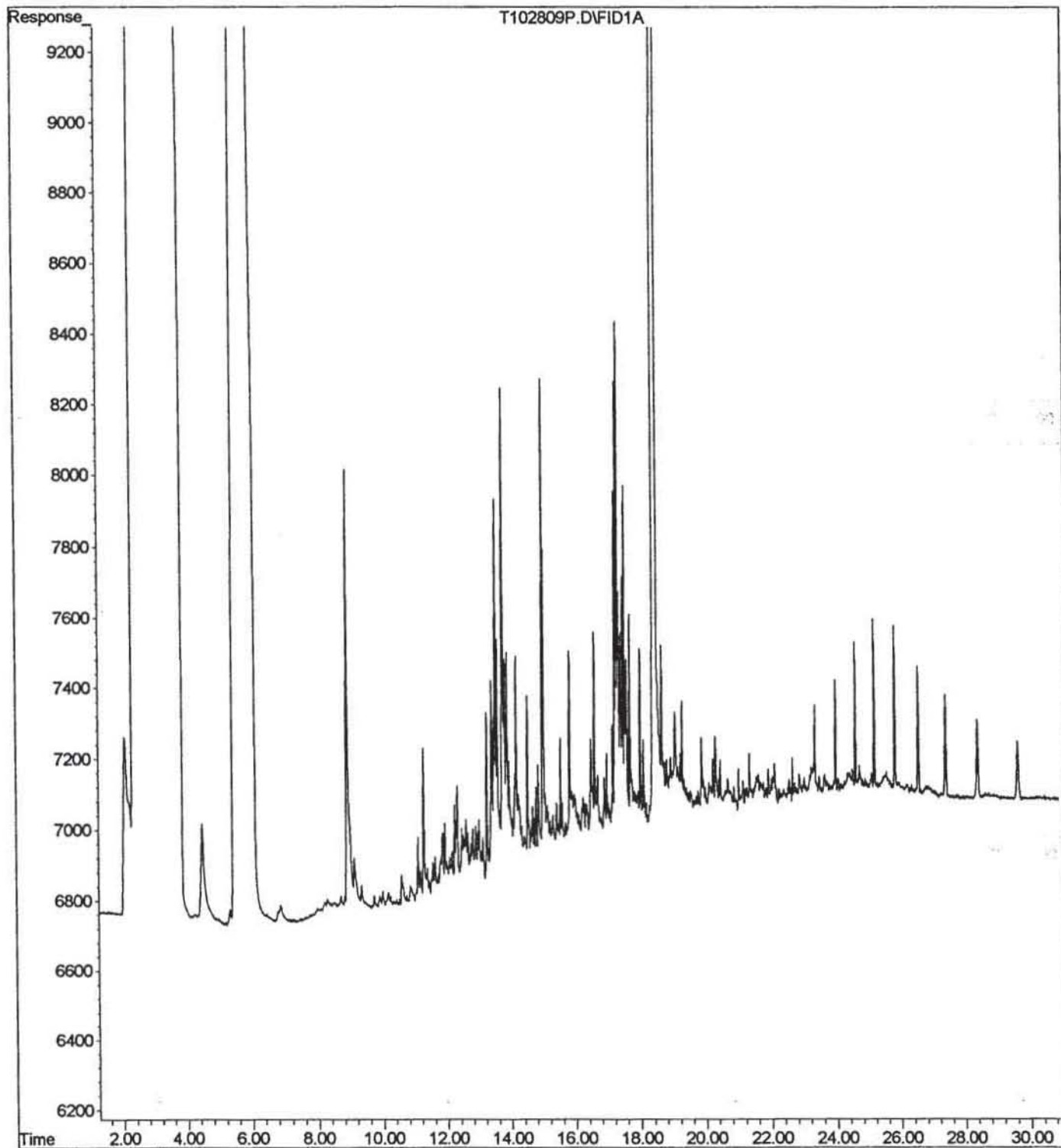
FIELD MEASUREMENTS					
PARAMETER		DETERMINED			
mg/l (except as noted)		VALUE			
pH		8			
LABORATORY ANALYSIS					
PARAMETER		ANALYTICAL RESULTS			SPIKE
		ORIGINAL	DUPLICATE	RECHECK	%
Total Organic Carbon		1,437	1,393		
Car. Biochem. Oxy. Demand		1,671			
Ammonia Nitrogen		84.0			
Thallium		<0.020			
Aluminum		2.559			
(0.3)	Arsenic	0.029			
(0.2-0.3)	Cadmium	<0.020			
(5.0)	Chromium	0.022			
(2.0)	Copper	<0.025			
(1.5)	Lead	<0.020			
(3.0)	Manganese	0.547			
(3.0)	Nickel	0.267			
(6.0)	Zinc	0.453			
(0.2)	Silver	0.020			
(4.0)	Barium	<0.200			
Beryllium		<0.005			
Antimony		<0.060			
(0.2)	Selenium	<0.020			
Total Petroleum Hydrocarbons		*			
Volatile Organics - Water		**			
SAMPLE COMMENTS					
* C6-C12: None detected (<2.5 mg/l) >C12-C28: 4.86 mg/l TPH profile detected with predominate hydrocarbon species in the C10-C22 range. Concentration: 4.86 mg/l ** See attachment.					

APPROVED DATE

APPROVED BY

LABORATORY DIRECTOR

File : C:\HPCHEM\1\DATA\102809\T102809P.D
Operator : EBP
Acquired : 29 Oct 109 12:54 am using AcqMethod FID1AA.M
Instrument : fid1
Sample Name: MCC RECYCLING, NA-2611
Misc Info : EAST CLARIFER
Vial Number: 16



1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EAST CLARIFER

CUSTOMER MCC RECYCLING PERMIT NA-2611

LAB E P H ID # 15233 MISC RUN # 09 J 27

Matrix: (soil/water) WATER Lab Sample ID: MCC RECYCLING,

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: V102809K.D

Level: (low/med) LOW Date Received: 10/27/2009

% Moisture: not dec. Date Analyzed: 10/28/2009

GC Column: DB-624 ID: 0.32 (mm) Dilution Factor: 5.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

75-71-8	Dichlorodifluoromethane	25	U
74-87-3	Chloromethane	25	U
75-01-4	Vinyl Chloride	25	U
74-83-9	Bromomethane	25	UL
75-00-3	Chloroethane	25	U
75-69-4	Trichlorofluoromethane	25	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroetha	25	U
75-35-4	1,1-Dichloroethene	25	U
67-64-1	Acetone	3600	ED
75-15-0	Carbon Disulfide	68	D
79-20-9	Methyl acetate	48	D
75-09-2	Methylene chloride	25	U
1634-04-4	MTBE	50	U
156-60-5	trans-1,2-Dichloroethene	25	U
75-34-3	1,1-Dichloroethane	25	U
156-59-2	cis-1,2-Dichloroethene	25	U
78-93-3	2-Butanone	430	D
67-66-3	Chloroform	25	U
71-55-6	1,1,1-Trichloroethane	25	U
1110-82-7	Cyclohexane	25	U
56-23-5	Carbon Tetrachloride	25	U
107-06-2	1,2-Dichloroethane	25	U
71-43-2	Benzene	25	U
79-01-6	Trichloroethene	25	U
78-87-5	1,2-Dichloropropane	25	U
108-87-2	Methylcyclohexane	25	U
75-27-4	Bromodichloromethane	25	U
10061-01-5	cis-1,3-Dichloropropene	25	U
108-10-1	4-Methyl-2-pentanone (MIBK)	30	JD
108-88-3	Toluene	25	U
10061-02-6	trans-1,3-Dichloropropene	25	U
79-00-5	1,1,2-Trichloroethane	25	U
591-78-6	2-Hexanone	25	U
127-18-4	Tetrachloroethene	25	U
124-48-1	Dibromochloromethane	25	U
106-93-4	1,2-Dibromoethane	25	U
108-90-7	Chlorobenzene	25	U
100-41-4	Ethylbenzene	25	U
108383	m/p Xylene	50	U

1A

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

EAST CLARIFER

CUSTOME MCC RECYCLING PERMIT NA-2611

LAB E P H ID # 15233 MISC RUN # 09 J 27

Matrix: (soil/water) WATER

Lab Sample ID: MCC RECYCLING,

Sample wt/vol: 5.0 (g/ml) ML

Lab File ID: V102809K.D

Level: (low/med) LOW

Date Received: 10/27/2009

% Moisture: not dec.

Date Analyzed: 10/28/2009

GC Column: DB-624 ID: 0.32 (mm)

Dilution Factor: 5.0

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

95476	o Xylene	25	U
100-42-5	Styrene	25	U
75-25-2	Bromoform	25	U
98-82-8	Isopropylbenzene	25	U
79-34-5	1,1,2,2-Tetrachloroethane	25	U
541-73-1	1,3-Dichlorobenzene	25	U
106-46-7	1,4-Dichlorobenzene	25	U
95-50-1	1,2-Dichlorobenzene	25	U
96-12-8	1,2-Dibromo-3-Chloropropane	25	U
120-82-1	1,2,4-Trichlorobenzene	25	U H

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

EAST CLARIFER

CUSTOMER MCC RECYCLING PERMIT NA-2611

LAB E P H ID # 15233 MISC RUN # 09 J 27

Matrix: (soil/water) WATER Lab Sample ID: MCC RECYCLING,

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: V102809K.D

Level: (low/med) LOW Date Received: 10/27/2009

% Moisture: not dec. Date Analyzed: 10/28/2009

GC Column: DB-624 ID: 0.32 (mm) Dilution Factor: 5.0

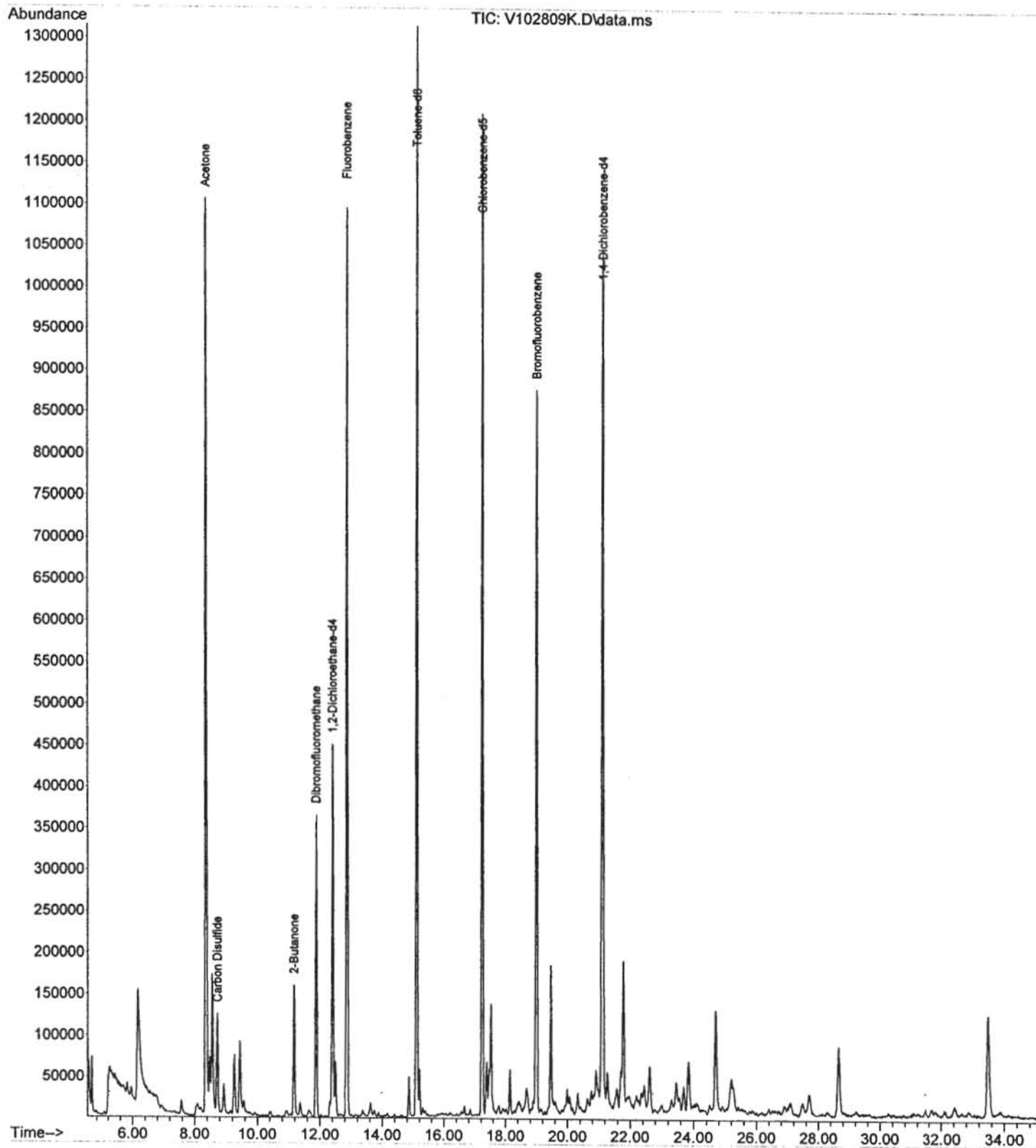
Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/LNumber TICs found: 7

CAS NO.	COMPOUND NAME	RT	EST. CONC.	Q
1. 000074-93-1	Methanethiol	6.17	73	JND
2. 000067-63-0	Isopropyl Alcohol	8.56	45	JND
3. 000124-18-5	Decane	19.47	34	JND
4. 1000309-37-4	Oxalic acid, isobutyl nonyl ester	21.78	40	JND
5.	unknown	24.71	35	JD
6. 000629-50-5	Tridecane	28.66	29	JND
7. 001120-21-4	Undecane	33.49	48	JND

File :C:\msdchem\1\DATA\102809\V102809K.D
Operator : M. CANTU / R.VERASTEGUI
Acquired : 28 Oct 2009 4:09 pm using AcqMethod VOA.M
Instrument : VOA #1
Sample Name: MCC RECYCLING, NA-2611, ID 15233, 09 J 27
Misc Info : EAST CLARIFER, 1:5 DIL.
Vial Number: 27



Subject Information						Location/General Information								Requested Analysis						Matrix Codes	
Subject Name: MCL RECYCLING CLP						Site Name:														DW - Drinking Water WW - Water SO - Soil SL - Sludge Liq - Liquid Air - Air SOL - Other Solid OI - Oil O - Other	
Address: 200 N. RICHBY RD						Address: 200 N. RICHBY RD															
Contact Name: THOMAS HASLER						Property Description: OIL RECYCLING FACILITY															
Phone Number:						Suspected Contaminants:															
Sampler's Name: John G...						Weather Conditions:															
Sample #	Collection				# of bottles	Number of Preserved Bottles								Requested Analysis						Lab Use Only	
	Field ID/ Point of Collection	Date	Time	Sampled By		Matrix	HCl	NaOH	HNO3	H2SO4	NONE	NaHSO4	ICE	UO A	TPH	CBOD	607 NH3	METALS	TOC		SV
1	PAST DIGESTOR	10/27/09	11:01am	JLB	WW																NA-2610
2	PAST CLARIFIER	10/27/09	1:20pm	JLB	WW																NA-2611
3	PAST CLARIFIER	10/27/09	1:30pm	JLB	WW																NA-2612
4	PAST DIGESTOR	10/27/09	1:40pm	JLB	WW																NA-2613
Sample Information: Type of sample: <input checked="" type="checkbox"/> Grab <input type="checkbox"/> Composite <input type="checkbox"/> Direct <input checked="" type="checkbox"/> Indirect <input type="checkbox"/> Split Accompanied: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No DPRS: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No																					
Field Tests Conducted/Results: #1 pH 7 #2 pH 8 #3 pH 7 #4 pH 5																					
Comments/Remarks: POSSIBLE SOURCE INTO VINCE BOYD VIA PIPES IN PIPES.																					
Sample Custody: Relinquished by Sampler: [Signature] Date/Time: 10/27/09 3:15pm Received By: [Signature] Date/Time: 10/27/09 3:15pm																					
Relinquished by EPH: [Signature] Date/Time: [Blank] Received By: [Blank] Date/Time: [Blank]																					
Sample received with proper pH: * Yes No Sample received on ice: * Yes No RUN NO: 2009J27																					

ENVIRONMENTAL PUBLIC HEALTH DIVISION LABORATORY
HARRIS COUNTY PUBLIC HEALTH ENVIRONMENTAL SERVICES

Sampling / Custody Nonconformance Report

ID JLE 10/27/09 Date 10/28/09
NC Completed By Morton, Vana Collected By Emerson
Run Number(s) 2009J27 Number of Samples 3
Sample ID/ Location NA-2610, NA-2611, NA-2612, NA-2613
Nonconformance 1: Improper preservation
Nonconformance 2:
Nonconformance Comments Not enough preservation in container. Added more preservative for Ammonia, Metals and TOC.

Analysis Request 1

Analysis Request 2

Analysis Request 3

Analysis Request 4

Corrective Action 1 Samples preserved by lab staff

Corrective Action 2

Corrective Action 3

Impact on Data 1

Impact on Data 2

Comments on Data Impact

Field Investigator _____

Sample Administrator V. Morton

QA/QC CB

Manager - Laboratory Services CB

Include With Report



Harris County
HCPHES
Public Health & Environmental Services
Environmental Public Health Division

SAMPLE DATA

MCC Recycling c/o U.S. Oil Recovery L.P.
400 N. Richey
Pasadena, TX 77506
ATTN: Klaus Genssler
SAMPLE LOCATION: West Clarifier

ID NO.: 15233
SAMPLE NO.: NA-2612
OUTFALL: NA
SAMPLE DATE: 10/27/09
SAMPLE TIME: 1:30 PM
RUN NO.: 2009J27

SAMPLE AMOUNT 1x1qt-P 1x250ml-P 1x500ml-P 1x40ml-GP 1x40ml-GP 1x40ml-GP

APPEARANCE: Greyish black liquid

SAMPLED BY: John L. Emerson

VN SENT: _____

PLANT TYPE: NON PERMITTED SAMPLE TYPE: Grab

COPY TO: _____

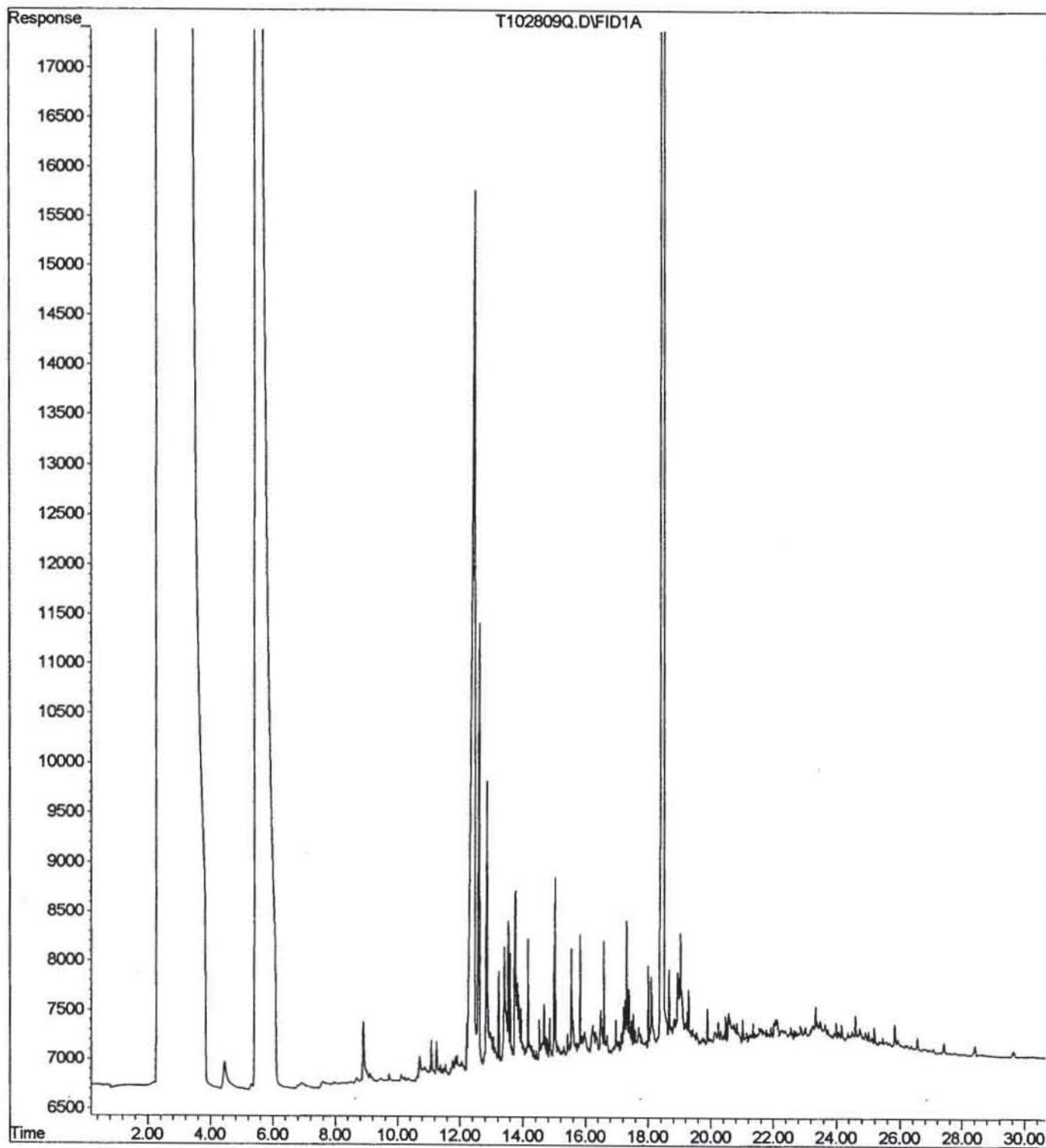
FIELD MEASUREMENTS			
PARAMETER mg/l (except as noted)	DETERMINED VALUE		
pH	7		
LABORATORY ANALYSIS			
PARAMETER	ANALYTICAL RESULTS		SPIKE
	ORIGINAL	DUPLICATE	RECHECK
			%
Total Organic Carbon	2,117		
Car. Biochem. Oxy. Demand	2,573		
Ammonia Nitrogen	194.5		
Thallium	<0.020		
Aluminum	7.834		
(0.3) Arsenic	0.025		
(0.2-0.3) Cadmium	<0.020		
(5.0) Chromium	0.027		
(2.0) Copper	<0.025		
(1.5) Lead	<0.020		
(3.0) Manganese	1.919		
(3.0) Nickel	0.290		
(6.0) Zinc	0.417		
(0.2) Silver	0.050		
(4.0) Barium	<0.200		
Beryllium	<0.005		
Antimony	<0.060		
(0.2) Selenium	<0.020		
Total Petroleum Hydrocarbons	*		
Volatile Organics - Water	**		
SAMPLE COMMENTS			
<p>* C6-C12: 6.96 mg/l >C12-C28: 11.5 mg/l TOTAL 18.46 mg/l TPH profile detected with predominate hydrocarbon species in the C10-C34 range. Concentration: 18.5 mg/l ** See attachment.</p>			

APPROVED DATE

APPROVED BY

11/6/09
Chris Dally
LABORATORY DIRECTOR

File : C:\HPCHEM\1\DATA\102809\T102809Q.D
Operator : EBP
Acquired : 29 Oct 109 2:06 am using AcqMethod FID1AA.M
Instrument : fid1
Sample Name: MCC RECYCLING, NA-2612
Misc Info : WEST CLARIFER
Vial Number: 17



1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

WEST CLARIFER

CUSTOMER MCC RECYCLING PERMIT NA-2612

LAB E P H ID # 15233 MISC RUN # 09 J 27

Matrix: (soil/water) WATER Lab Sample ID: MCC RECYCLING

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: V102809J.D

Level: (low/med) LOW Date Received: 10/27/2009

% Moisture: not dec. Date Analyzed: 10/28/2009

GC Column: DB-624 ID: 0.32 (mm) Dilution Factor: 5.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

75-71-8	Dichlorodifluoromethane	25	U
74-87-3	Chloromethane	25	U
75-01-4	Vinyl Chloride	25	U
74-83-9	Bromomethane	25	UL
75-00-3	Chloroethane	25	U
75-69-4	Trichlorofluoromethane	25	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroetha	25	U
75-35-4	1,1-Dichloroethene	25	U
67-64-1	Acetone	1500	D
75-15-0	Carbon Disulfide	250	D
79-20-9	Methyl acetate	30	D
75-09-2	Methylene chloride	25	U
1634-04-4	MTBE	50	U
156-60-5	trans-1,2-Dichloroethene	25	U
75-34-3	1,1-Dichloroethane	25	U
156-59-2	cis-1,2-Dichloroethene	25	U
78-93-3	2-Butanone	210	D
67-66-3	Chloroform	25	U
71-55-6	1,1,1-Trichloroethane	25	U
1110-82-7	Cyclohexane	25	U
56-23-5	Carbon Tetrachloride	25	U
107-06-2	1,2-Dichloroethane	25	U
71-43-2	Benzene	25	U
79-01-6	Trichloroethene	25	U
78-87-5	1,2-Dichloropropane	25	U
108-87-2	Methylcyclohexane	25	U
75-27-4	Bromodichloromethane	25	U
10061-01-5	cis-1,3-Dichloropropene	25	U
108-10-1	4-Methyl-2-pentanone (MIBK)	50	U
108-88-3	Toluene	25	U
10061-02-6	trans-1,3-Dichloropropene	25	U
79-00-5	1,1,2-Trichloroethane	25	U
591-78-6	2-Hexanone	25	U
127-18-4	Tetrachloroethene	25	U
124-48-1	Dibromochloromethane	25	U
106-93-4	1,2-Dibromoethane	25	U
108-90-7	Chlorobenzene	25	U
100-41-4	Ethylbenzene	25	U
108383	m/p Xylene	50	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

WEST CLARIFER

CUSTOMER MCC RECYCLING PERMIT NA-2612

LAB E P H ID # 15233 MISC RUN # 09 J 27

Matrix: (soil/water) WATER Lab Sample ID: MCC RECYCLING,

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: V102809J.D

Level: (low/med) LOW Date Received: 10/27/2009

% Moisture: not dec. Date Analyzed: 10/28/2009

GC Column: DB-624 ID: 0.32 (mm) Dilution Factor: 5.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

95476	o Xylene	25	U
100-42-5	Styrene	25	U
75-25-2	Bromoform	25	U
98-82-8	Isopropylbenzene	25	U
79-34-5	1,1,2,2-Tetrachloroethane	25	U
541-73-1	1,3-Dichlorobenzene	25	U
106-46-7	1,4-Dichlorobenzene	25	U
95-50-1	1,2-Dichlorobenzene	25	U
96-12-8	1,2-Dibromo-3-Chloropropane	25	U
120-82-1	1,2,4-Trichlorobenzene	25	U <i>H</i>

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

WEST CLARIFER

CUSTOMER MCC RECYCLING PERMIT NA-2612

LAB E P H ID # 15233 MISC RUN # 09 J 27

Matrix: (soil/water) WATER Lab Sample ID: MCC RECYCLING,

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: V102809J.D

Level: (low/med) LOW Date Received: 10/27/2009

% Moisture: not dec. Date Analyzed: 10/28/2009

GC Column: DB-624 ID: 0.32 (mm) Dilution Factor: 5.0

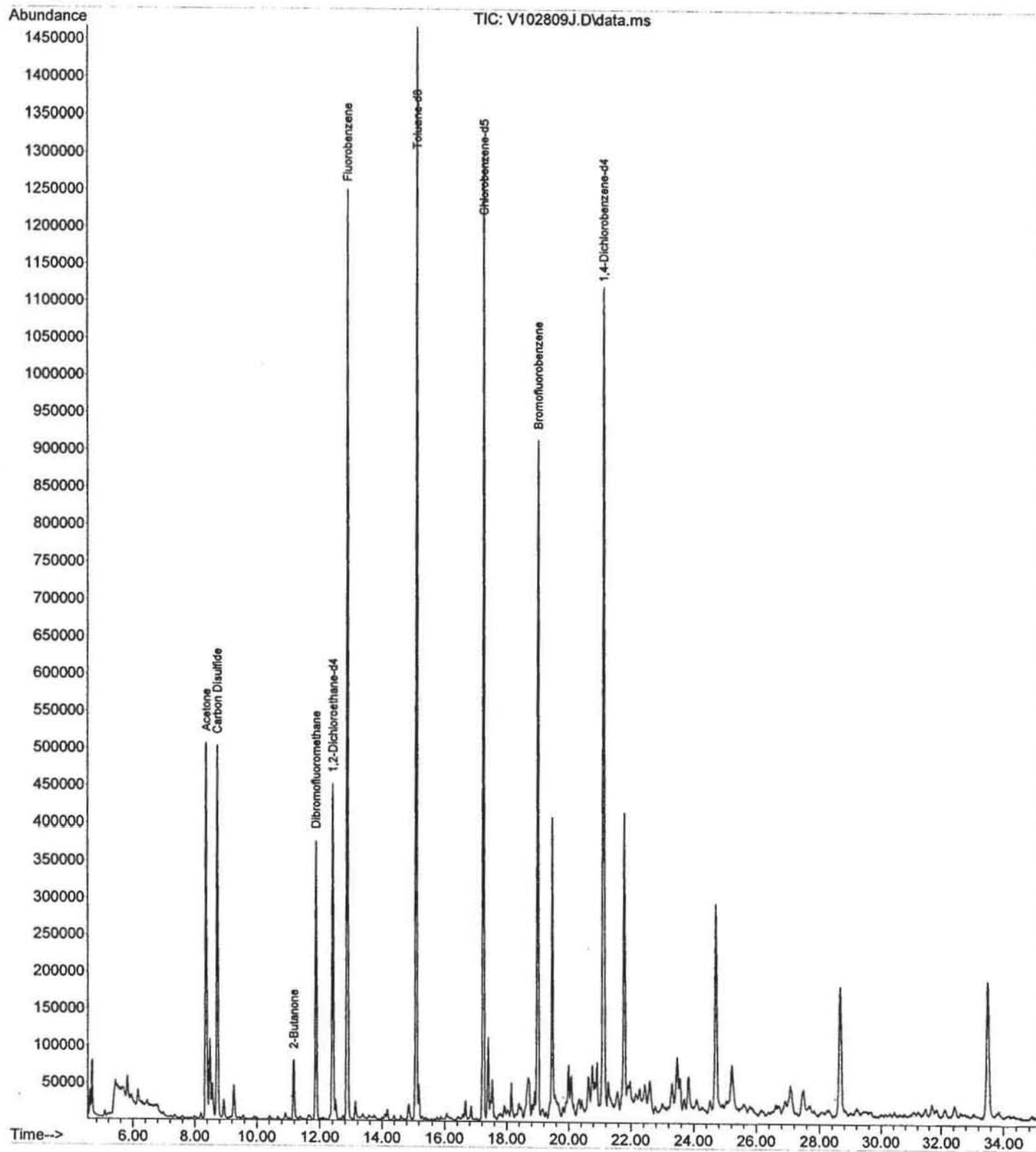
Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/LNumber TICs found: 6

CAS NO.	COMPOUND NAME	RT	EST. CONC.	Q
1.	unknown	18.69	26	JD
2. 000124-18-5	Decane	19.46	66	JND
3. 001120-21-4	Undecane	21.78	88	JND
4. 000629-50-5	Tridecane	24.70	71	JND
5. 000629-50-5	Tridecane	28.66	58	JND
6. 000629-50-5	Tridecane	33.49	68	JND

File : C:\msdchem\1\DATA\102809\V102809J.D
Operator : M. CANTU / R. VERASTEGUI
Acquired : 28 Oct 2009 3:23 pm using AcqMethod VOA.M
Instrument : VOA #1
Sample Name: MCC RECYCLING, NA-2612, ID 15233, 09 J 27
Misc Info : WEST CLARIFER, 1:5 DIL.
Vial Number: 27



Subject Information						Location/General Information								Requested Analysis								Matrix Codes							
Subject Name: MILL RECYCLING CLP						Site Name:																DW - Drinking Water WW - Water SO - Soil SL - Sludge Liq - Liquid Air - Air SOL - Other Solid OI - Oil O - Other							
Address: 200 N. RICHBY RD						Address: 200 N. RICHBY RD																							
Contact Name: THOMAS HASLER						Property Description: OIL RECYCLING FACILITY																							
Phone Number:						Suspected Contaminants:																							
Sampler's Name: John E.						Weather Conditions:																							
Sample #	Field ID/ Point of Collection	Collection		Sampled By	Matrix	# of bottles	Number of Preserved Bottles							Requested Analysis								Lab Use Only							
		Date	Time				HCl	NaOH	HNO3	H2SO4	NONE	NaHSO4	ICE	UO A	TPH	CBOD	CO ₂ NH ₃	METALS	TAC	SV									
1	PAST DIGESTOR	10/27/09	11:01 am	JLB	NW		/		/	/	/	/	/	/	/	/	/												NA-2610
2	PAST CLARIFIER	10/27/09	1:20 pm	JLB	WW		/		/	/	/	/	/	/	/	/	/												NA-2611
3	PAST CLARIFIER	10/27/09	1:30 pm	JLB	WW		/		/	/	/	/	/	/	/	/	/												NA-2612
4	PAST DIGESTOR	10/27/09	1:40 pm	JLB	WW		/		/	/	/	/	/	/	/	/	/												NA-2613
Sample Information:						Comments/Remarks:																							
Type of sample: <input checked="" type="checkbox"/> Grab <input type="checkbox"/> Composite <input type="checkbox"/> Direct <input type="checkbox"/> Indirect <input type="checkbox"/> Split Accompanied: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Field Tests Conducted/Results: #1 pH 7 #2 pH 8 #3 pH 7 #4 pH 5						DPRS: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Positive Source into Vinco Mayon via TRS in Pipe.																							
Sample Custody:																													
Relinquished by Sampler:						Date/Time: 10/27/09 3:15 pm						Received By:						Date/Time: 10/27/09 3:15 pm						Sample received with proper pH: * <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Sample received on ice: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No					
Relinquished by EPH:																		Date/Time:						RUN NO: 2009 J27					

ENVIRONMENTAL PUBLIC HEALTH DIVISION LABORATORY
HARRIS COUNTY PUBLIC HEALTH ENVIRONMENTAL SERVICES

Sampling / Custody Nonconformance Report

ID JLE 10/27/09 Date 10/28/09
NC Completed By Morton, Vana Collected By Emerson
Run Number(s) 2009J27 Number of Samples 3
Sample ID/ Location NA-2610, NA-2611, NA-2612, NA-2613
Nonconformance 1: Improper preservation
Nonconformance 2:
Nonconformance Comments Not enough preservation in container. Added more preservative for Ammonia, Metals and TOC.

Analysis Request 1

Analysis Request 2

Analysis Request 3

Analysis Request 4

Corrective Action 1 Samples preserved by lab staff

Corrective Action 2

Corrective Action 3

Impact on Data 1

Impact on Data 2

Comments on Data Impact

Field Investigator _____

Sample Administrator V. Morton

QA/QC CB

Manager - Laboratory Services CB

Include With Report ☒

Harris County
HCPHES
Public Health & Environmental Services
Environmental Public Health Division

SAMPLE DATA

MCC Recycling c/o U.S. Oil Recovery L.P.
400 N. Richey
Pasadena, TX 77506
ATTN: Klaus Genssler
SAMPLE LOCATION: West Digester

ID NO.: 15233
SAMPLE NO.: NA-2613
OUTFALL: NA
SAMPLE DATE: 10/27/09
SAMPLE TIME: 1:40 PM

RUN NO.: 2009J27

SAMPLE AMOUNT 1x1qt-P 1x250ml-P 1x500ml-P 1x40ml-GP 1x40ml-GP 1x40ml-GP

APPEARANCE: Light tan

SAMPLED BY: John L. Emerson

VN SENT: _____

PLANT TYPE: NON PERMITTED SAMPLE TYPE: Grab

COPY TO: _____

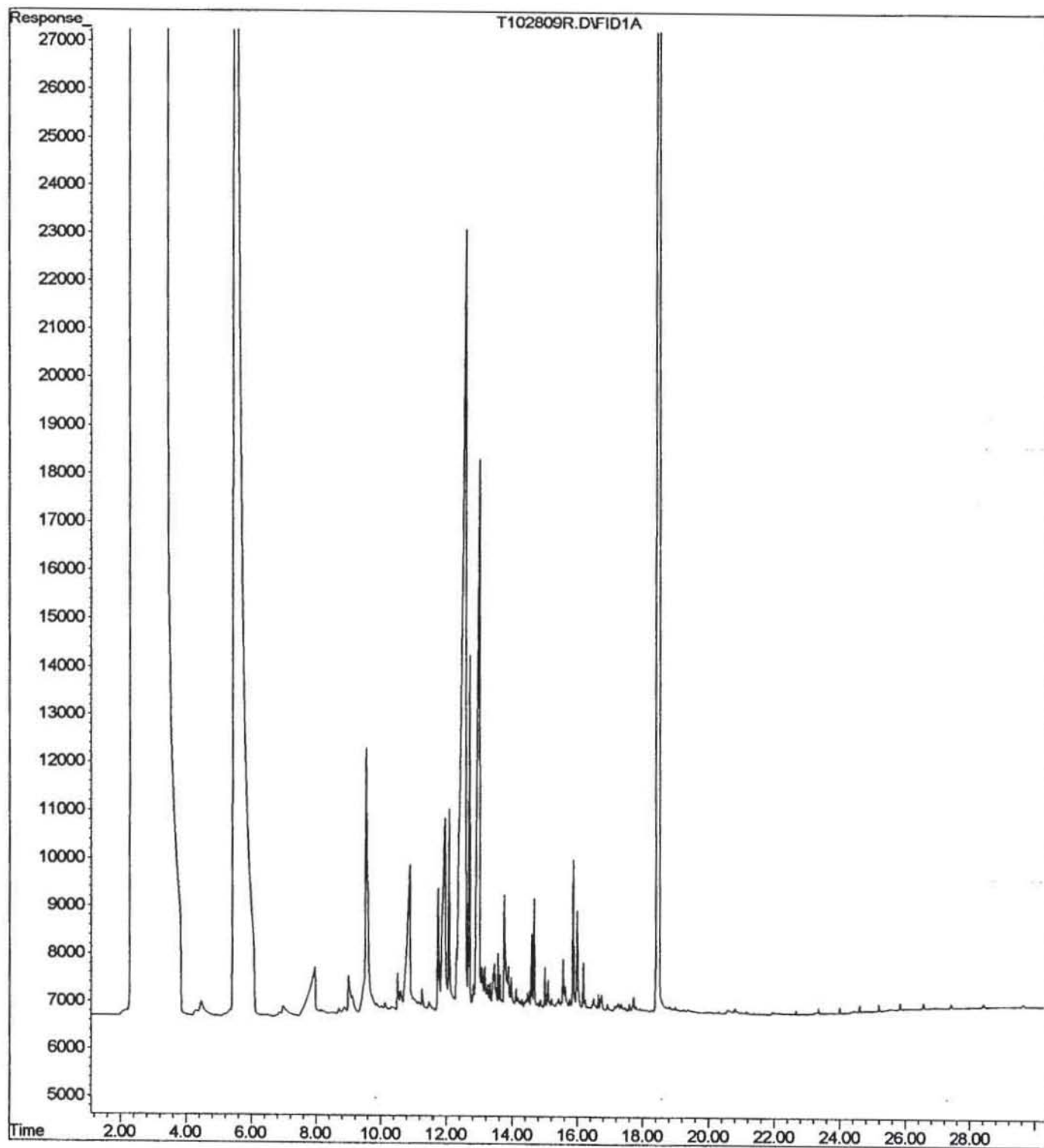
FIELD MEASUREMENTS			
PARAMETER mg/l (except as noted)	DETERMINED VALUE		
pH	5		
LABORATORY ANALYSIS			
PARAMETER	ANALYTICAL RESULTS	SPIKE	
	ORIGINAL DUPLICATE RECHECK	%	
Total Organic Carbon	2,911		
Car. Biochem. Oxy. Demand	4,015		
Ammonia Nitrogen	272.0		
Thallium	<0.020		
Aluminum	11.765		
(0.3) Arsenic	0.024		
(0.2-0.3) Cadmium	<0.020		
(5.0) Chromium	<0.0125		
(2.0) Copper	<0.025		
(1.5) Lead	<0.020		
(3.0) Manganese	1.328		
(3.0) Nickel	0.231		
(6.0) Zinc	0.199		
(0.2) Silver	0.055		
(4.0) Barium	<0.200		
Beryllium	<0.005		
Antimony	<0.060		
(0.2) Selenium	<0.020		
Total Petroleum Hydrocarbons	*		
Volatile Organics - Water	**		
SAMPLE COMMENTS			
* C6-C12: 30.8 mg/l >C12-C28: 7.05 mg/l TOTAL 37.85 mg/l TPH profile detected with predominate hydrocarbon species in the C8-C16 range. Concentration: 37.9 mg/l ** See attachment.			

APPROVED DATE

APPROVED BY

11/6/09
Christy
LABORATORY DIRECTOR

File : C:\HPCHEM\1\DATA\102809\T102809R.D
Operator : EBP
Acquired : 29 Oct 109 3:18 am using AcqMethod FID1AA.M
Instrument : fid1
Sample Name: MCC RECYCLING, NA-2613
Misc Info : WEST DIGESTER
Vial Number: 18



1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

WEST DIGESTER

CUSTOMER MCC RECYCLING PERMIT NA-2613

LAB EPH ID # 15233 MISC RUN # 09 J 27

Matrix: (soil/water) WATER

Lab Sample ID: MCC RECYCLING,

Sample wt/vol: 5.0 (g/ml) ML

Lab File ID: V102909J.D

Level: (low/med) LOW

Date Received: 10/27/2009

% Moisture: not dec.

Date Analyzed: 10/29/2009

GC Column: DB-624 ID: 0.32 (mm)

Dilution Factor: 10.0

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

75-71-8	Dichlorodifluoromethane	50	U
74-87-3	Chloromethane	50	U
75-01-4	Vinyl Chloride	50	U
74-83-9	Bromomethane	50	UL
75-00-3	Chloroethane	50	U
75-69-4	Trichlorofluoromethane	50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroetha	50	U
75-35-4	1,1-Dichloroethene	50	U
67-64-1	Acetone	480	D
75-15-0	Carbon Disulfide	70	D
79-20-9	Methyl acetate	51	D
75-09-2	Methylene chloride	50	U
1634-04-4	MTBE	100	U
156-60-5	trans-1,2-Dichloroethene	50	U
75-34-3	1,1-Dichloroethane	50	U
156-59-2	cis-1,2-Dichloroethene	50	U
78-93-3	2-Butanone	420	D
67-66-3	Chloroform	50	U
71-55-6	1,1,1-Trichloroethane	50	U
1110-82-7	Cyclohexane	50	U
56-23-5	Carbon Tetrachloride	50	U
107-06-2	1,2-Dichloroethane	50	U
71-43-2	Benzene	50	U
79-01-6	Trichloroethene	50	U
78-87-5	1,2-Dichloropropane	50	U
108-87-2	Methylcyclohexane	50	U
75-27-4	Bromodichloromethane	50	U
10061-01-5	cis-1,3-Dichloropropene	50	U
108-10-1	4-Methyl-2-pentanone (MIBK)	100	U
108-88-3	Toluene	50	U
10061-02-6	trans-1,3-Dichloropropene	50	U
79-00-5	1,1,2-Trichloroethane	50	U
591-78-6	2-Hexanone	50	U
127-18-4	Tetrachloroethene	50	U
124-48-1	Dibromochloromethane	50	U
106-93-4	1,2-Dibromoethane	50	U
108-90-7	Chlorobenzene	50	U
100-41-4	Ethylbenzene	50	U
108383	m/p Xylene	100	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

WEST DIGESTER

CUSTOMER MCC RECYCLING PERMIT NA-2613

LAB E P H ID # 15233 MISC RUN # 09 J 27

Matrix: (soil/water) WATER Lab Sample ID: MCC RECYCLING,

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: V102909J.D

Level: (low/med) LOW Date Received: 10/27/2009

% Moisture: not dec. Date Analyzed: 10/29/2009

GC Column: DB-624 ID: 0.32 (mm) Dilution Factor: 10.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

95476	o Xylene	50	U
100-42-5	Styrene	50	U
75-25-2	Bromoform	50	U
98-82-8	Isopropylbenzene	50	U
79-34-5	1,1,2,2-Tetrachloroethane	50	U
541-73-1	1,3-Dichlorobenzene	50	U
106-46-7	1,4-Dichlorobenzene	50	U
95-50-1	1,2-Dichlorobenzene	50	U
96-12-8	1,2-Dibromo-3-Chloropropane	50	U
120-82-1	1,2,4-Trichlorobenzene	50	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

WEST DIGESTER

CUSTOMER MCC RECYCLING PERMIT NA-2613

LAB E P H ID # 15233 MISC RUN # 09 J 27

Matrix: (soil/water) WATER Lab Sample ID: MCC RECYCLING,

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: V102909J.D

Level: (low/med) LOW Date Received: 10/27/2009

% Moisture: not dec. Date Analyzed: 10/29/2009

GC Column: DB-624 ID: 0.32 (mm) Dilution Factor: 10.0

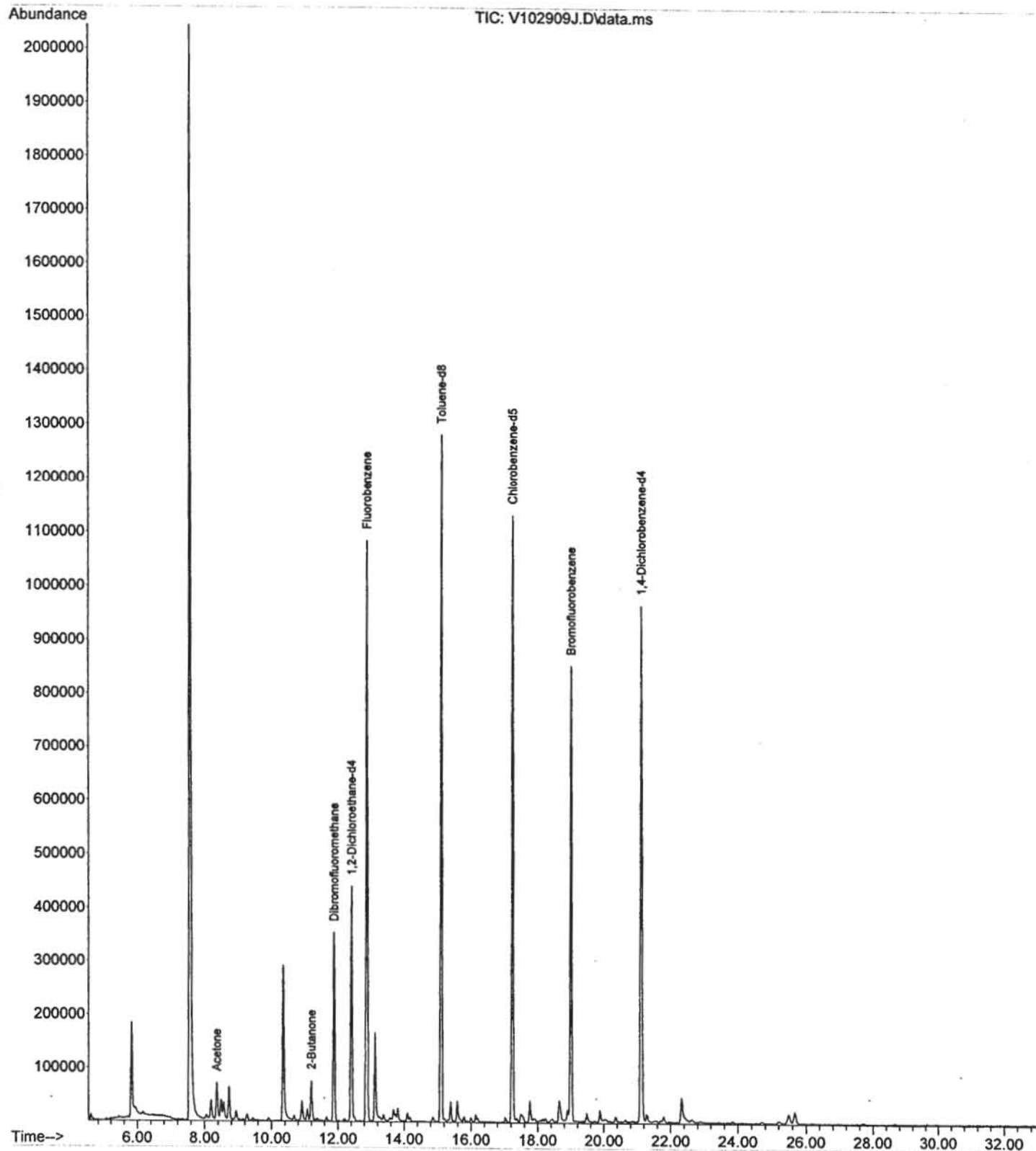
Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/LNumber TICs found: 4

CAS NO.	COMPOUND NAME	RT	EST. CONC.	Q
1. 000075-07-0	Acetaldehyde	5.82	94	JND
2. 000064-17-5	Ethyl alcohol	7.57	1100	JND
3. 000071-23-8	1-Propanol	10.35	160	JND
4. 000071-36-3	1-Butanol	13.12	86	JND

File :C:\msdchem\1\DATA\102909\V102909J.D
Operator : M. CANTU / R. VERASTEGUI
Acquired : 29 Oct 2009 2:19 pm using AcqMethod VOA.M
Instrument : VOA #1
Sample Name: MCC RECYCLING, NA-2613, ID 15233, 09 J 27
Misc Info : WEST DIGESTER, 1:10 DIL.
Vial Number: 1



Subject Information				Location/General Information				Requested Analysis				Matrix Codes														
Subject Name: MCL Recycling CLP				Site Name:								DW - Drinking Water WW - Water														
Address: 200 XL RICHBY RD				Address: 200 XL RICHBY RD								SO - Soil SL - Sludge														
Contact Name: THOMAS KASIBER				Property Description: OIL RECYCLING FACILITY								Liq - Liquid Air - Air SOL - Other Solid														
Phone Number:				Suspected Contaminants:								OI - Oil O - Other														
Sampler's Name: John Doe				Weather Conditions:																						
Sample #	Field ID/ Point of Collection	Collection			# of bottles	Number of Preserved Bottles							UO A	TPH	COD	NH3	METALS	TOL	SV	Lab Use Only						
		Date	Time	Sampled By		Matrix	HCl	NaOH	HNO3	H2SO4	NONE	NaHSO4									ICE					
1	PAST DIGESTOR	10/27/09	1101pm	JLB	NW																NA-2610					
2	PAST CLARIFIER	10/27/09	1201pm	JLB	WW																NA-2611					
3	PAST CLARIFIER	10/27/09	1301pm	JLB	WW																NA-2612					
4	PAST DIGESTOR	10/27/09	1401pm	JLB	WW																NA-2613					
Sample Information																					Comments/Remarks					
Type of sample: <input checked="" type="checkbox"/> Grab <input type="checkbox"/> Composite <input type="checkbox"/> Direct <input type="checkbox"/> Indirect <input type="checkbox"/> Split																					Accompanied: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		DPRS: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Possible Source into Vinco Bayou via Drain Pipe.	
Field Tests Conducted/Results: #1 pH 7 #2 pH 8 #3 pH 7 #4 pH 5																										
Sample Custody																										
Relinquished by Sampler:				Date/Time: 10/27/09 3:15pm				Received By:				Date/Time: 10/27/09 3:15pm				Sample received with proper pH: * Yes No										
Relinquished by EPH:				Date/Time:				Received By:				Date/Time:				Sample received on ice: Yes No										
RUN NO: 2009 J27																										

ENVIRONMENTAL PUBLIC HEALTH DIVISION LABORATORY
HARRIS COUNTY PUBLIC HEALTH ENVIRONMENTAL SERVICES

Sampling / Custody Nonconformance Report

ID JLE 10/27/09 Date 10/28/09
NC Completed By Morton, Vana Collected By Emerson
Run Number(s) 2009J27 Number of Samples 3
Sample ID/ Location NA-2610, NA-2611, NA-2612, NA-2613
Nonconformance 1: Improper preservation
Nonconformance 2:
Nonconformance Comments Not enough preservation in container. Added more preservative for Ammonia, Metals and TOC.

Analysis Request 1

Analysis Request 2

Analysis Request 3

Analysis Request 4

Corrective Action 1 Samples preserved by lab staff

Corrective Action 2

Corrective Action 3

Impact on Data 1

Impact on Data 2

Comments on Data Impact

Field Investigator _____

Sample Administrator V. Morton

QA/QC CB

Manager - Laboratory Services CB

Include With Report



Harris County
HCPHES
Public Health & Environmental Services
Environmental Public Health Division

SAMPLE DATA

MCC Recycling c/o U.S. Oil Recovery L.P.

400 N. Richey

Pasadena, TX 77506

ATTN: Klaus Genssler

SAMPLE LOCATION: Manhole on the North side next to the old STP
digesters

ID NO.: 15233

SAMPLE NO.: NA-2615

OUTFALL: NA

SAMPLE DATE: 10/27/09

SAMPLE TIME: 3:25 PM

RUN NO.: 2009J27

SAMPLE AMOUNT 1x1qt-P 1x250ml-P 1x500ml-P 1x40ml-GP 1x40ml-GP

APPEARANCE: Black, sulfur odor

SAMPLED BY: Al V. Rushanan

VN SENT: _____

PLANT TYPE: NON PERMITTED SAMPLE TYPE: Grab

COPY TO: _____

FIELD MEASUREMENTS

PARAMETER mg/l (except as noted)	DETERMINED VALUE
Flow (MGD)	7 gpm

LABORATORY ANALYSIS

PARAMETER	ANALYTICAL RESULTS			SPIKE %
	ORIGINAL	DUPLICATE	RECHECK	
Total Organic Carbon	1,986			
Car. Biochem. Oxy. Demand	2,167			
Ammonia Nitrogen	155.5			
Thallium	<0.020			
Aluminum	4.210			
(0.3) Arsenic	0.033			
(0.2-0.3) Cadmium	<0.020			
(5.0) Chromium	0.027			
(2.0) Copper	<0.025			
(1.5) Lead	<0.020			
(3.0) Manganese	1.190			
(3.0) Nickel	0.319			
(6.0) Zinc	0.370			
(0.2) Silver	0.032			
(4.0) Barium	<0.200			
Beryllium	<0.005			
Antimony	<0.060			
(0.2) Selenium	<0.020			
Total Petroleum Hydrocarbons	*			
Volatile Organics - Water	**			

SAMPLE COMMENTS

* C6-C12: 4.79 mg/l

>C12-C28: 17.6 mg/l

>C28-C35: 3.15 mg/l

TOTAL 25.54 mg/l

TPH profile detected with predominate hydrocarbon species in the C10-C34 range.

Concentration: 25.5 mg/l

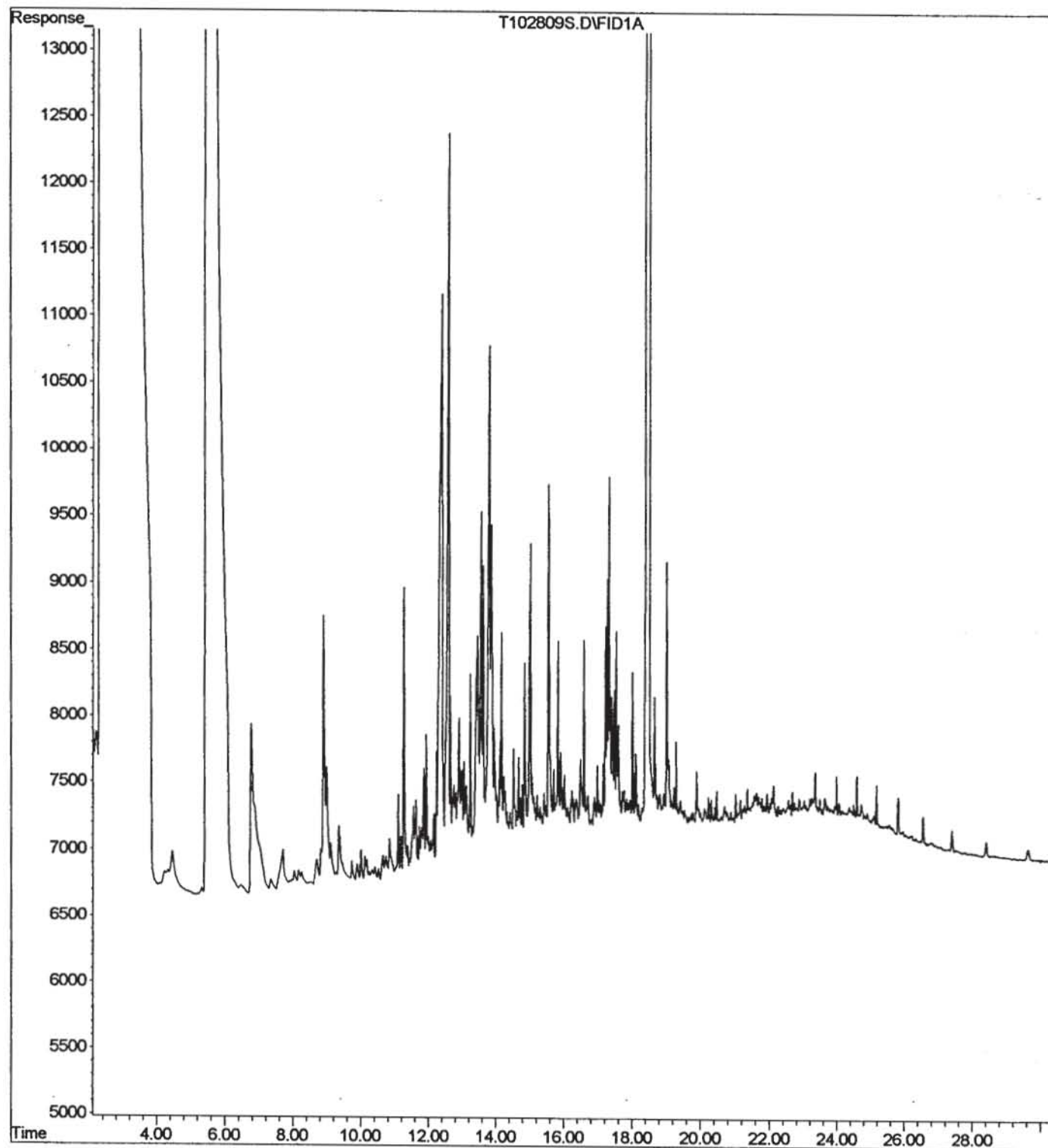
**See attachment.

APPROVED DATE

APPROVED BY

11/6/09
Chris Bailey
LABORATORY DIRECTOR

File : C:\HPCHEM\1\DATA\102809\T102809S.D
Operator : EBP
Acquired : 29 Oct 109 4:31 am using AcqMethod FID1AA.M
Instrument : fid1
Sample Name: MCC RECYCLING, NA-2615
Misc Info : MANHOLE ON THE...
Vial Number: 19



1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MAN HOLE...

CUSTOMER MCC RECYCLING PERMIT NA-2615

LAB E P H ID # 15233 MISC RUN # 09 J 27

Matrix: (soil/water) WATER Lab Sample ID: MCC RECYCLING

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: V102909W.D

Level: (low/med) LOW Date Received: 10/27/2009

% Moisture: not dec. Date Analyzed: 10/29/2009

GC Column: DB-624 ID: 0.32 (mm) Dilution Factor: 10.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg)	UG/L	Q
75-71-8	Dichlorodifluoromethane	50	U	
74-87-3	Chloromethane	50	U	
75-01-4	Vinyl Chloride	50	U	
74-83-9	Bromomethane	50	UL	
75-00-3	Chloroethane	50	U	
75-69-4	Trichlorofluoromethane	50	U	
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroetha	50	U	
75-35-4	1,1-Dichloroethene	50	U	
67-64-1	Acetone	19000	ED	
75-15-0	Carbon Disulfide	80	D	
79-20-9	Methyl acetate	380	D	
75-09-2	Methylene chloride	50	U	
1634-04-4	MTBE	100	U	
156-60-5	trans-1,2-Dichloroethene	50	U	
75-34-3	1,1-Dichloroethane	50	U	
156-59-2	cis-1,2-Dichloroethene	50	U	
78-93-3	2-Butanone	2600	ED	
67-66-3	Chloroform	50	U	
71-55-6	1,1,1-Trichloroethane	50	U	
1110-82-7	Cyclohexane	50	U	
56-23-5	Carbon Tetrachloride	50	U	
107-06-2	1,2-Dichloroethane	50	U	
71-43-2	Benzene	50	U	
79-01-6	Trichloroethene	50	U	
78-87-5	1,2-Dichloropropane	50	U	
108-87-2	Methylcyclohexane	50	U	
75-27-4	Bromodichloromethane	50	U	
10061-01-5	cis-1,3-Dichloropropene	50	U	
108-10-1	4-Methyl-2-pentanone (MIBK)	240	D	
108-88-3	Toluene	50	U	
10061-02-6	trans-1,3-Dichloropropene	50	U	
79-00-5	1,1,2-Trichloroethane	50	U	
591-78-6	2-Hexanone	50	U	
127-18-4	Tetrachloroethene	50	U	
124-48-1	Dibromochloromethane	50	U	
106-93-4	1,2-Dibromoethane	50	U	
108-90-7	Chlorobenzene	50	U	
100-41-4	Ethylbenzene	50	U	
108383	m/p Xylene	76	JD	

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MAN HOLE...

CUSTOMER MCC RECYCLING PERMIT NA-2615

LAB E P H ID # 15233 MISC RUN # 09 J 27

Matrix: (soil/water) WATER Lab Sample ID: MCC RECYCLING

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: V102909W.D

Level: (low/med) LOW Date Received: 10/27/2009

% Moisture: not dec. Date Analyzed: 10/29/2009

GC Column: DB-624 ID: 0.32 (mm) Dilution Factor: 10.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

95476	o Xylene	50	U
100-42-5	Styrene	50	U
75-25-2	Bromoform	50	U
98-82-8	Isopropylbenzene	50	U
79-34-5	1,1,2,2-Tetrachloroethane	50	U
541-73-1	1,3-Dichlorobenzene	50	U
106-46-7	1,4-Dichlorobenzene	50	U
95-50-1	1,2-Dichlorobenzene	50	U
96-12-8	1,2-Dibromo-3-Chloropropane	50	U
120-82-1	1,2,4-Trichlorobenzene	50	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

MAN HOLE...

CUSTOMER MCC RECYCLING PERMIT NA-2615

LAB E P H ID # 15233 MISC RUN # 09 J 27

Matrix: (soil/water) WATER Lab Sample ID: MCC RECYCLING,

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: V102909W.D

Level: (low/med) LOW Date Received: 10/27/2009

% Moisture: not dec. Date Analyzed: 10/29/2009

GC Column: DB-624 ID: 0.32 (mm) Dilution Factor: 10.0

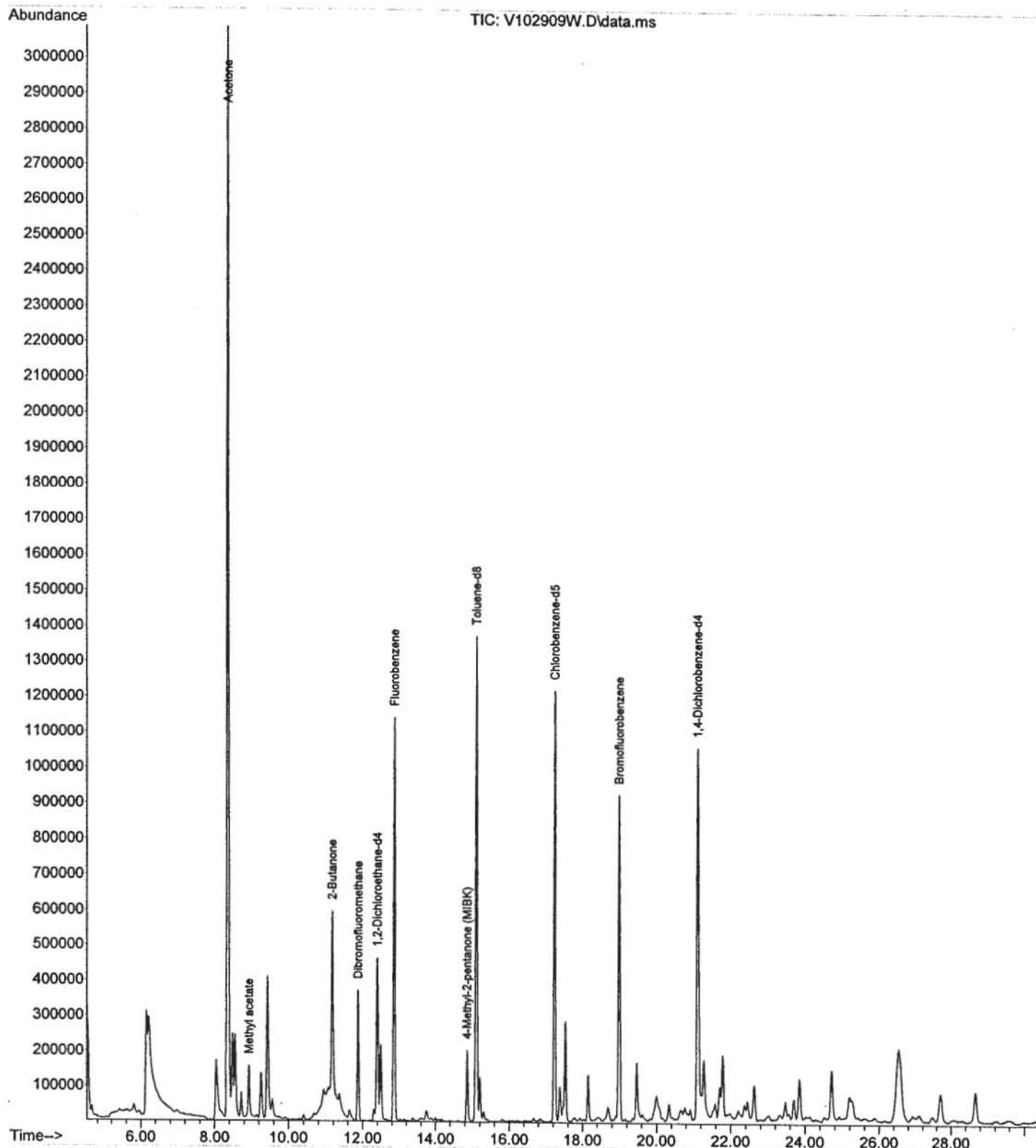
Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/LNumber TICs found: 17

CAS NO.	COMPOUND NAME	RT	EST. CONC.	Q
1. 000075-18-3	Dimethyl sulfide	8.49	110	JND
2. 000067-63-0	Isopropyl Alcohol	8.56	120	JND
3. 000075-65-0	2-Propanol, 2-methyl-	9.26	66	JND
4. 000075-33-2	2-Propanethiol	9.44	200	JND
5. 000124-18-5	Decane	19.47	77	JND
6. 000091-57-6	Naphthalene, 2-methyl-	20.00	64	JND
7. 000104-76-7	1-Hexanol, 2-ethyl-	21.28	76	JND
8. 001120-21-4	Undecane	21.78	77	JND
9. 000934-80-5	Benzene, 4-ethyl-1,2-dimethyl-	22.63	54	JND
10. 000488-23-3	Benzene, 1,2,3,4-tetramethyl-	23.85	62	JND
11.	unknown	24.72	79	JD
12. 000101-84-8	Diphenyl ether	26.53	270	JND
13. 000091-20-3	Naphthalene	27.71	60	JND
14. 073105-67-6	1-Iodo-2-methylundecane	28.66	61	JND
15. 000124-18-5	Decane	33.51	73	JND
16. 000074-93-1	Methanethiol	6.15	130	JND
17. 000075-08-1	Ethanethiol	8.05	120	JND

File :C:\msdchem\1\DATA\102909\V102909W.D
Operator : M. CANTU / R. VERASTEGUI
Acquired : 29 Oct 2009 5:26 pm using AcqMethod VOA.M
Instrument : VOA #1
Sample Name: MCC RECYCLING, NA-2615, ID 15233, 09 J 27
Misc Info : MAN HOLE ON..., 1:10 DIL.
Vial Number: 1



HARRIS COUNTY POLLUTION CONTROL DIVISION

UNPERMITTED SAMPLE/CUSTODY LOG RECORD

DATE: 10/27/09
TIME: 3:25 AM/PMSAMPLENAME: MCCSITE/ADDRESS: 200N. RICHEYSAMPLE LOCATION: MANHOLE ON THE NORTH SIDE NEXT TO THE OLD STP DIGESTERSAMOUNT COLLECTED: 1 qt. + 500 ml + 250 ml + 2x FLOW: 7 gpmSAMPLE DESCRIPTION: BLACK, SULFUR OIL 40 ml

FIELD TESTS PERFORMED: _____

SAMPLED BY: AL Ruckman

Briefly summarize the sampling episode including suspected contaminants and attach a copy of the complaint,

ROTC, etc.: Appears to be drainage from the north clarifier and/or digesters.Inform Lab Director of special samples: the old STP contains MCC wastewater.ANALYSES REQUESTEDWET LAB☐ Fecal Coliform/Fecal Streptococcus
☒ BOD/CBOD
☒ Ammonia Nitrogen
☐ pH
☐ Chloride☐ TR
☐ TDS
☐ TSS
☐ Sulfide
☒ COD☒ TOC/TIC
☒ Metals (specify) _____
☐ Fluoride
☐ Detergent
☐ ConductivityINSTRUMENTATION☐ FID Screen
☐ Profile Comparison
☐ Other Analysis (explain) ☒☐ GC/MS Screen
☐ Oil & Grease (soil Only)
☐ TPH☒ BTEX
☐ Specific Analyte
☒ VOA
☒ SVFIELD CUSTODY

This sample was placed behind a locked door in the Laboratory after-hours refrigerator: YES NO

BY: _____ DATE: _____ TIME: _____ AM/PM

LABORATORY CUSTODYACCEPTED BY: W. M. M. M.DATE: 10/27/09 RUN NO.: 2009J27 TIME: 4:50 AM/PMNA
2615

ENVIRONMENTAL PUBLIC HEALTH DIVISION LABORATORY
HARRIS COUNTY PUBLIC HEALTH ENVIRONMENTAL SERVICES

Sampling / Custody Nonconformance Report

ID AR 10/27/09 Date 10/28/09
NC Completed By Morton, Vana Collected By Rushanan
Run Number(s) 2009J27 Number of Samples 1
Sample ID/ Location NA-2615
Nonconformance 1: Improper preservation
Nonconformance 2:
Nonconformance Comments Not enough preservation in containers. Added more preservation for Ammonia, Metals and TOC.

Analysis Request 1

Analysis Request 2

Analysis Request 3

Analysis Request 4

Corrective Action 1 Samples preserved by lab staff

Corrective Action 2

Corrective Action 3

Impact on Data 1

Impact on Data 2

Comments on Data Impact

Field Investigator _____

Sample Administrator *V. Morton*

QA/QC *CB*

Manager - Laboratory Services *CB*

Include With Report



Harris County
HCPHES
Public Health & Environmental Services
Environmental Public Health Division

SAMPLE DATA

MCC Recycling c/o U.S. Oil Recovery L.P.
400 N. Richey
Pasadena, TX 77506
ATTN: Klaus Genssler
SAMPLE LOCATION: South side of bridge, East side of bayou

ID NO.: 15233
SAMPLE NO.: NA-2616
OUTFALL: NA
SAMPLE DATE: 10/27/09
SAMPLE TIME: 3:50 PM

RUN NO.: 2009J27

SAMPLE AMOUNT 1x1qt-P 1x250ml-P 1x500ml-P 1x40ml-GP 1x40ml-GP 1x40ml-GP

APPEARANCE: Black, sulfur odor

SAMPLED BY: Al V. Rushanan

VN SENT: _____

PLANT TYPE: NON PERMITTED SAMPLE TYPE: Grab

COPY TO: _____

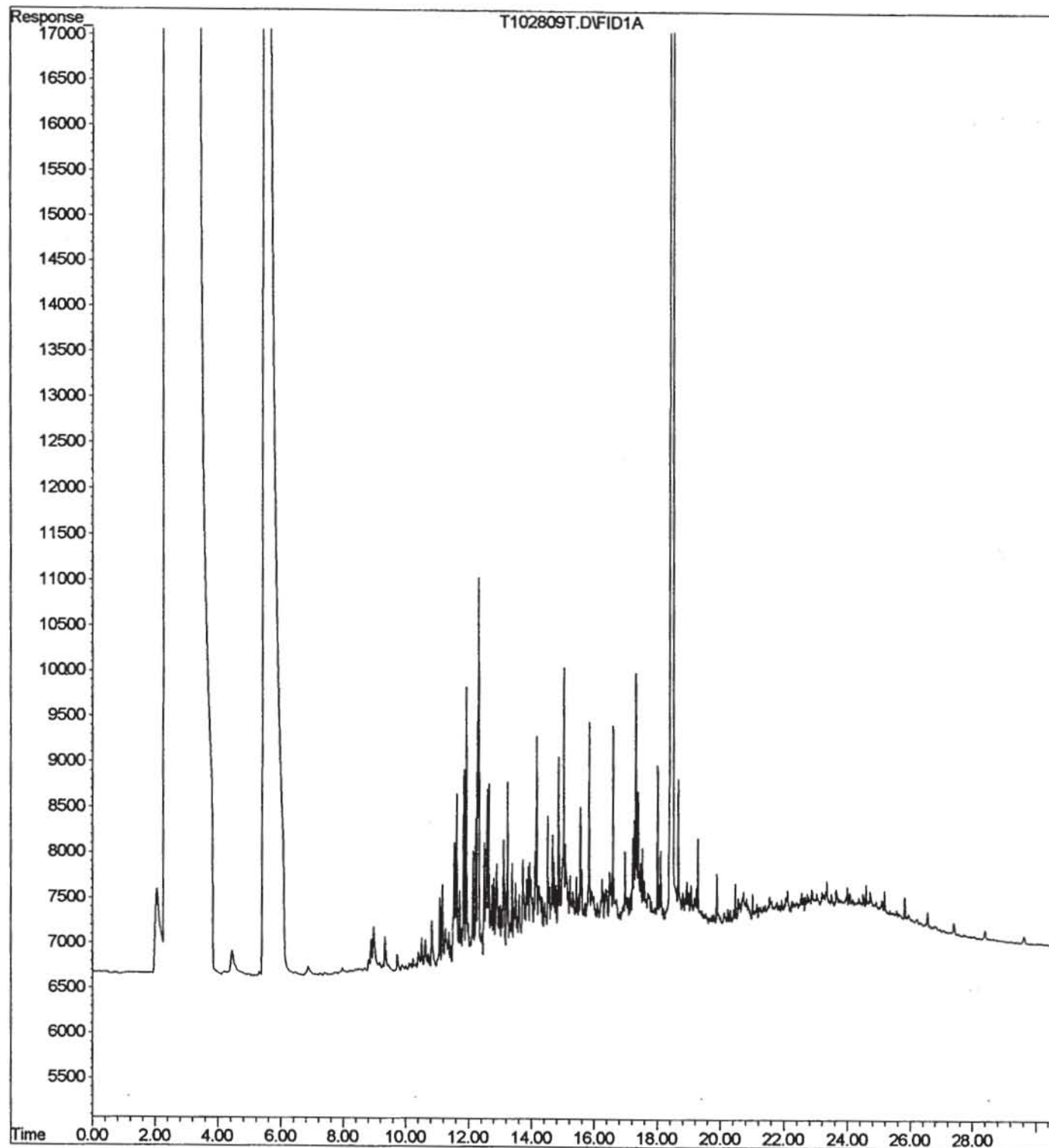
FIELD MEASUREMENTS				
PARAMETER mg/l (except as noted)	DETERMINED VALUE			
Flow (MGD)	>20 gpm			
LABORATORY ANALYSIS				
PARAMETER	ANALYTICAL RESULTS			SPIKE
	ORIGINAL	DUPLICATE	RECHECK	%
Total Organic Carbon	418			
Car. Biochem. Oxy. Demand	558			
Ammonia Nitrogen	45.5	45.5		
Thallium	<0.020			
Aluminum	4.817			
(0.3) Arsenic	0.022			
(0.2-0.3) Cadmium	<0.020			
(5.0) Chromium	0.016			
(2.0) Copper	0.028			
(1.5) Lead	<0.020			
(3.0) Manganese	0.560			
(3.0) Nickel	0.100			
(6.0) Zinc	0.476			
(0.2) Silver	<0.0125			
(4.0) Barium	<0.200			
Beryllium	<0.005			
Antimony	<0.060			
(0.2) Selenium	<0.020			
Total Petroleum Hydrocarbons	*			
Volatile Organics - Water	**			
SAMPLE COMMENTS				
* C6-C12: 4.68 mg/l >C12-C28: 18.0 mg/l >C28-C35: 4.78 mg/l TOTAL 27.46 mg/l TPH profile detected with predominate hydrocarbon species in the C10-C38 range. ** See attachment.				

APPROVED DATE

APPROVED BY

11/6/09
Chapman
LABORATORY DIRECTOR

File : C:\HPCHEM\1\DATA\102809\T102809T.D
Operator : EBP
Acquired : 29 Oct 109 5:44 am using AcqMethod FID1AA.M
Instrument : fid1
Sample Name: UNKNOWN, NA-2616
Misc Info : S. SIDE OF BRIDGE...
Vial Number: 20



1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

UNKNOWN

CUSTOMER UNKNOWN-S. SIDE... PERMIT NA-2616

LAB E P H ID # 15233 MISC RUN # 09 J 27

Matrix: (soil/water) WATER Lab Sample ID: UNKNOWN, NA-26

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: V102809L.D

Level: (low/med) LOW Date Received: 10/27/2009

% Moisture: not dec. Date Analyzed: 10/28/2009

GC Column: DB-624 ID: 0.32 (mm) Dilution Factor: 5.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

75-71-8	Dichlorodifluoromethane	25	U
74-87-3	Chloromethane	25	U
75-01-4	Vinyl Chloride	25	U
74-83-9	Bromomethane	25	U L
75-00-3	Chloroethane	25	U
75-69-4	Trichlorofluoromethane	25	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroetha	25	U
75-35-4	1,1-Dichloroethene	25	U
67-64-1	Acetone	2500	D E
75-15-0	Carbon Disulfide	29	D
79-20-9	Methyl acetate	25	U
75-09-2	Methylene chloride	25	U
1634-04-4	MTBE	50	U
156-60-5	trans-1,2-Dichloroethene	25	U
75-34-3	1,1-Dichloroethane	25	U
156-59-2	cis-1,2-Dichloroethene	25	U
78-93-3	2-Butanone	300	D
67-66-3	Chloroform	25	U
71-55-6	1,1,1-Trichloroethane	25	U
1110-82-7	Cyclohexane	25	U
56-23-5	Carbon Tetrachloride	25	U
107-06-2	1,2-Dichloroethane	25	U
71-43-2	Benzene	25	U
79-01-6	Trichloroethene	25	U
78-87-5	1,2-Dichloropropane	25	U
108-87-2	Methylcyclohexane	25	U
75-27-4	Bromodichloromethane	25	U
10061-01-5	cis-1,3-Dichloropropene	25	U
108-10-1	4-Methyl-2-pentanone (MIBK)	64	D
108-88-3	Toluene	25	U
10061-02-6	trans-1,3-Dichloropropene	25	U
79-00-5	1,1,2-Trichloroethane	25	U
591-78-6	2-Hexanone	25	U
127-18-4	Tetrachloroethene	25	U
124-48-1	Dibromochloromethane	25	U
106-93-4	1,2-Dibromoethane	25	U
108-90-7	Chlorobenzene	25	U
100-41-4	Ethylbenzene	25	U
108383	m/p Xylene	90	D

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

UNKNOWN

CUSTOMER UNKNOWN-S. SIDE... PERMIT NA-2616

LAB E P H ID # 15233 MISC RUN # 09 J 27

Matrix: (soil/water) WATER

Lab Sample ID: UNKNOWN, NA-26

Sample wt/vol: 5.0 (g/ml) ML

Lab File ID: V102809L.D

Level: (low/med) LOW

Date Received: 10/27/2009

% Moisture: not dec.

Date Analyzed: 10/28/2009

GC Column: DB-624 ID: 0.32 (mm)

Dilution Factor: 5.0

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

95476	o Xylene	52	D
100-42-5	Styrene	25	U
75-25-2	Bromoform	25	U
98-82-8	Isopropylbenzene	25	U
79-34-5	1,1,2,2-Tetrachloroethane	25	U
541-73-1	1,3-Dichlorobenzene	25	U
106-46-7	1,4-Dichlorobenzene	25	U
95-50-1	1,2-Dichlorobenzene	25	U
96-12-8	1,2-Dibromo-3-Chloropropane	25	U
120-82-1	1,2,4-Trichlorobenzene	25	U <i>H</i>

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

UNKNOWN

CUSTOMER UNKNOWN-S. SIDE... PERMIT NA-2616

LAB E P H ID # 15233 MISC RUN # 09 J 27

Matrix: (soil/water) WATER Lab Sample ID: UNKNOWN, NA-26

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: V102809L.D

Level: (low/med) LOW Date Received: 10/27/2009

% Moisture: not dec. Date Analyzed: 10/28/2009

GC Column: DB-624 ID: 0.32 (mm) Dilution Factor: 5.0

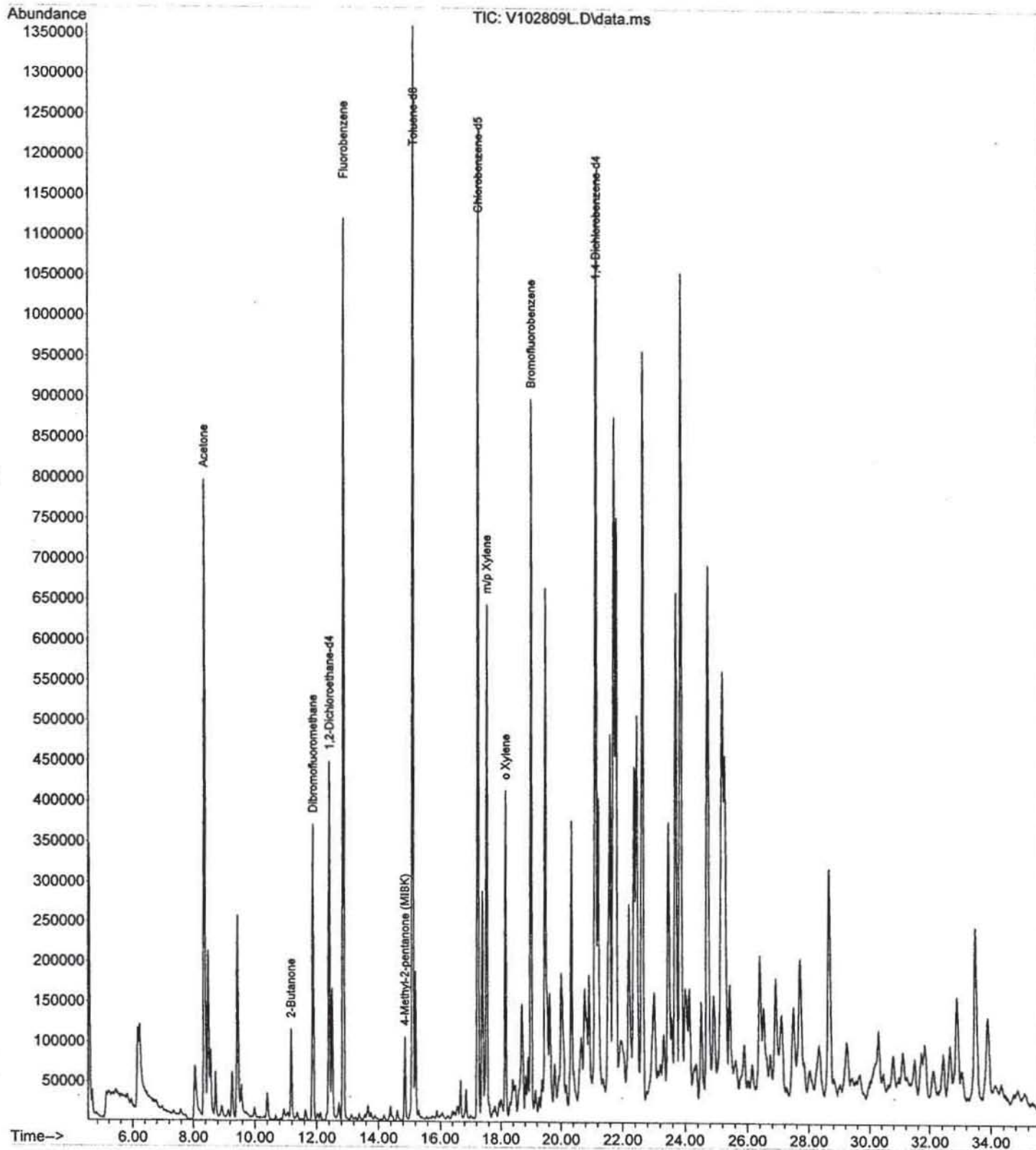
Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/LNumber TICs found: 24

CAS NO.	COMPOUND NAME	RT	EST. CONC.	Q
1. 000075-18-3	Dimethyl sulfide	8.49	50	JND
2. 000075-33-2	2-Propanethiol	9.44	65	JND
3.	unknown	18.68	52	JD
4.	unknown	19.47	150	JD
5.	unknown	20.00	52	JD
6. 000095-63-6	Benzene, 1,2,4-trimethyl-	20.33	77	JND
7.	unknown	20.78	47	JD
8. 000095-63-6	Benzene, 1,2,4-trimethyl-	21.21	76	JND
9. 001074-43-7	Benzene, 1-methyl-3-propyl-	21.58	130	JND
10. 000105-05-5	Benzene, 1,4-diethyl-	21.70	190	JND
11. 001120-21-4	Undecane	21.78	130	JND
12. 001074-55-1	Benzene, 1-methyl-4-propyl-	22.20	61	JND
13. 001758-88-9	Benzene, 2-ethyl-1,4-dimethyl-	22.36	96	JND
14. 000934-80-5	Benzene, 4-ethyl-1,2-dimethyl-	22.45	100	JND
15. 000934-80-5	Benzene, 4-ethyl-1,2-dimethyl-	22.62	230	JND
16. 001758-88-9	Benzene, 2-ethyl-1,4-dimethyl-	23.47	87	JND
17. 000488-23-3	Benzene, 1,2,3,4-tetramethyl-	23.70	140	JND
18. 000488-23-3	Benzene, 1,2,3,4-tetramethyl-	23.85	260	JND
19.	unknown	24.71	200	JD
20. 000095-93-2	Benzene, 1,2,4,5-tetramethyl-	25.18	160	JND
21. 004706-90-5	Benzene, 1,3-dimethyl-5-(1-methyl-2-propenyl)-	26.40	51	JND
22. 000629-50-5	Tridecane	28.66	92	JND
23. 000544-76-3	Hexadecane	33.49	83	JND
24. 000090-12-0	Naphthalene, 1-methyl-	33.89	48	JND

File :C:\msdchem\1\DATA\102809\V102809L.D
Operator : M. CANTU / R. VERASTEGUI
Acquired : 28 Oct 2009 5:08 pm using AcqMethod VOA.M
Instrument : VOA #1
Sample Name: UNKNOWN, NA-2616, ID 15233, 09 J 27
Misc Info : 1:5 DIL.
Vial Number: 27



HARRIS COUNTY POLLUTION CONTROL DIVISION

UNPERMITTED SAMPLE/CUSTODY LOG RECORD

DATE: 10/27/09
TIME: 3:50 AM/PMSAMPLENAME: UNKNOWNSITE/ADDRESS: VINCE BAYOU at W. RICHEY, EAST CORNERSAMPLE LOCATION: SOUTH SIDE OF BRIDGE, EAST SIDE
OF BAYOU (pH=2.0m) (pH=2.0m)AMOUNT COLLECTED: 1 qt. + 500ml + 250ml +FLOW: > 20 gpmSAMPLE DESCRIPTION: BLACK, SULFUR OXIDE 4 x 40 ml
(pH=2.0m)

FIELD TESTS PERFORMED: _____

SAMPLED BY: AL KUSHANBriefly summarize the sampling episode including suspected contaminants and attach a copy of the complaint, ROTC, etc.: Discharge from old abandoned sewer line
unearthed at above location.Inform Lab Director of special samples: City of Pasadena is conducting
dye tests and may TV the line to determine
its origin.ANALYSES REQUESTEDWET LAB

- ☐ Fecal Coliform/Fecal Streptococcus
☒ BOD/CBOD
☒ Ammonia Nitrogen
☐ pH
☐ Chloride

- ☐ TR
☐ TDS
☐ TSS
☐ Sulfide
☒ COD

- ☒ TOC/TIC
☒ Metals (specify) _____
☐ Fluoride
☐ Detergent
☐ Conductivity

INSTRUMENTATION

- ☐ FID Screen
☐ Profile Comparison
☐ Other Analysis (explain) X

- ☐ GC/MS Screen
☐ Oil & Grease (soil Only)
☐ TPH

- ☐ BTEX
☐ Specific Analyte

FIELD CUSTODYX VOAW
X SVThis sample was placed behind a locked door in the Laboratory after-hours refrigerator: YES NO
BY: _____ DATE: _____ TIME: _____ AM/PMLABORATORY CUSTODYACCEPTED BY: UmarDATE: 10/27/09RUN NO.: 2009J27TIME: 4:50AM/PM (P)

Harris County
HCPHES
Public Health & Environmental Services
Environmental Public Health Division

SAMPLE DATA

MCC Recycling c/o U.S. Oil Recovery L.P.
400 N. Richey
Pasadena, TX 77506
ATTN: Klaus Genssler
SAMPLE LOCATION: Lift station

ID NO.: 15233
SAMPLE NO.: NA-2617
OUTFALL: NA
SAMPLE DATE: 10/27/09
SAMPLE TIME: 5:40 PM

RUN NO.: 2009J28

SAMPLE AMOUNT 1x1qt-P 1x500ml-P 1x250ml-P 1x40ml-GP 1x40ml-GP 1x40ml-GP

APPEARANCE: Black, sulfur odor

SAMPLED BY: Craig W. Hill

VN SENT: _____

PLANT TYPE: NON PERMITTED SAMPLE TYPE: Grab

COPY TO: _____

LABORATORY ANALYSIS

PARAMETER	ANALYTICAL RESULTS			SPIKE %
	ORIGINAL	DUPLICATE	RECHECK	
Total Organic Carbon	950			
Car. Biochem. Oxy. Demand	1,238	1,166		
Ammonia Nitrogen	87.2			
Thallium	<0.020			
Aluminum	3.909			
(0.3) Arsenic	0.022			
(0.2-0.3) Cadmium	<0.020			
(5.0) Chromium	0.023			
(2.0) Copper	0.033			
(1.5) Lead	<0.020			
(3.0) Manganese	1.025			
(3.0) Nickel	0.187			
(6.0) Zinc	0.875			
(0.2) Silver	0.022			
(4.0) Barium	<0.200			
Beryllium	<0.005			
Antimony	<0.060			
(0.2) Selenium	<0.020			
Total Petroleum Hydrocarbons	*			
Volatile Organics - Water	**			

SAMPLE COMMENTS

* C6-C12: 7.24 mg/l

>C12-C28: 34.2 mg/l

>C28-C35: 8.43 mg/l

TOTAL 49.87 mg/l

TPH profile detected with predominate hydrocarbon species in the C8-C38 range.

Concentration: 49.9 mg/l

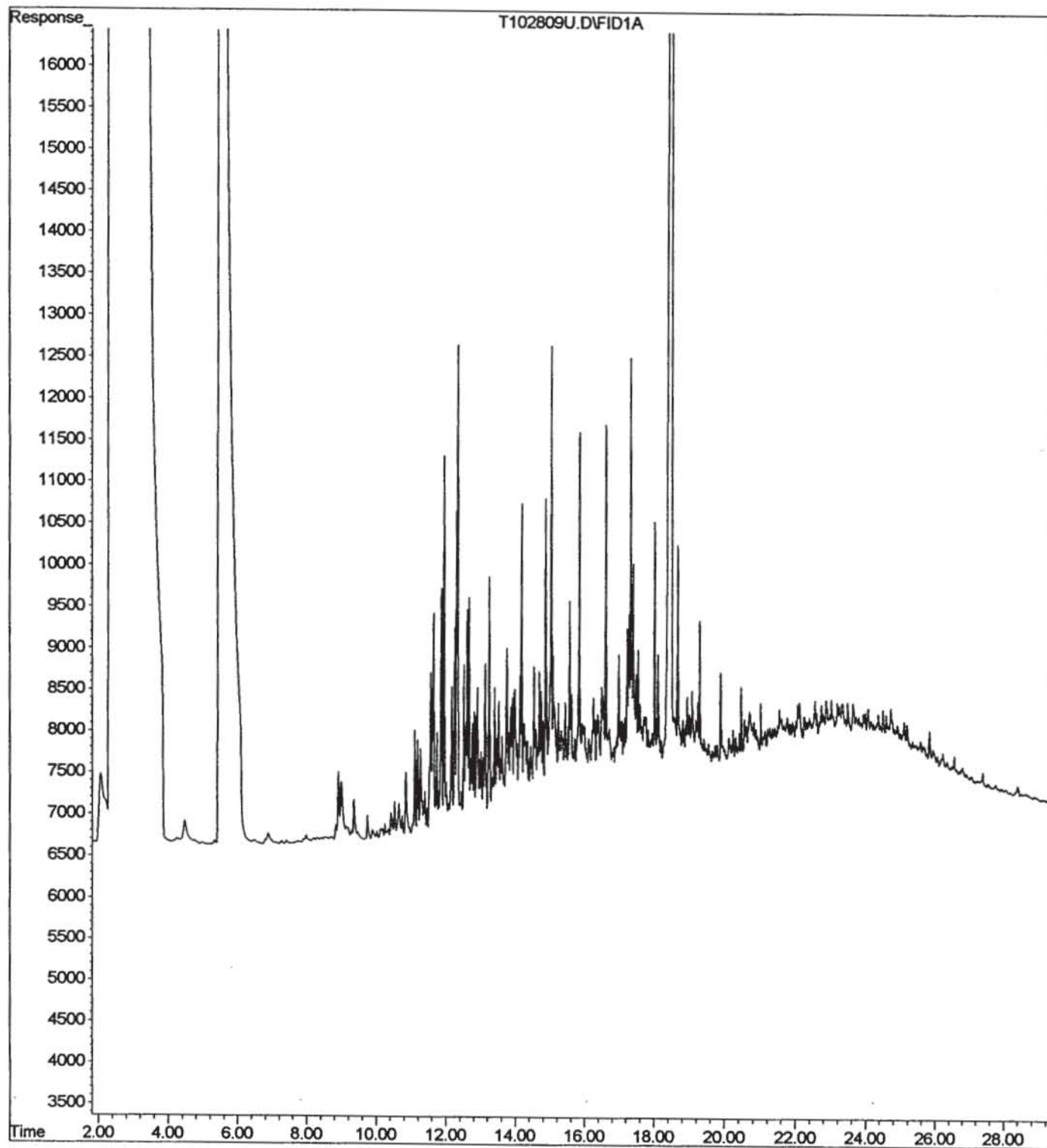
** See attachment.

APPROVED DATE

APPROVED BY

LABORATORY DIRECTOR

File : C:\HPCHEM\1\DATA\102809\T102809U.D
Operator : EBP
Acquired : 29 Oct 109 6:57 am using AcqMethod FID1AA.M
Instrument : fid1
Sample Name: MCC RECYCLING, NA-2617
Misc Info : LIFT STATION
Vial Number: 21



1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIFT STATION

CUSTOMER MCC RECYCLING PERMIT NA-2617

LAB E P H ID # 15233 MISC RUN # 09 J 28

Matrix: (soil/water) WATER Lab Sample ID: MCC LIFT STATIO

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: V102809M.D

Level: (low/med) LOW Date Received: 10/27/2009

% Moisture: not dec. Date Analyzed: 10/28/2009

GC Column: DB-624 ID: 0.32 (mm) Dilution Factor: 5.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

75-71-8	Dichlorodifluoromethane	25	U
74-87-3	Chloromethane	25	U
75-01-4	Vinyl Chloride	25	U
74-83-9	Bromomethane	25	U L
75-00-3	Chloroethane	25	U
75-69-4	Trichlorofluoromethane	25	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroetha	25	U
75-35-4	1,1-Dichloroethene	25	U
67-64-1	Acetone	6500	ED
75-15-0	Carbon Disulfide	39	D
79-20-9	Methyl acetate	83	D
75-09-2	Methylene chloride	25	U
1634-04-4	MTBE	50	U
156-60-5	trans-1,2-Dichloroethene	25	U
75-34-3	1,1-Dichloroethane	25	U
156-59-2	cis-1,2-Dichloroethene	25	U
78-93-3	2-Butanone	860	ED
67-66-3	Chloroform	25	U
71-55-6	1,1,1-Trichloroethane	25	U
1110-82-7	Cyclohexane	25	U
56-23-5	Carbon Tetrachloride	25	U
107-06-2	1,2-Dichloroethane	25	U
71-43-2	Benzene	28	D
79-01-6	Trichloroethene	25	U
78-87-5	1,2-Dichloropropane	25	U
108-87-2	Methylcyclohexane	25	U
75-27-4	Bromodichloromethane	25	U
10061-01-5	cis-1,3-Dichloropropene	25	U
108-10-1	4-Methyl-2-pentanone (MIBK)	130	D
108-88-3	Toluene	25	U
10061-02-6	trans-1,3-Dichloropropene	25	U
79-00-5	1,1,2-Trichloroethane	25	U
591-78-6	2-Hexanone	25	U
127-18-4	Tetrachloroethene	25	U
124-48-1	Dibromochloromethane	25	U
106-93-4	1,2-Dibromoethane	25	U
108-90-7	Chlorobenzene	25	U
100-41-4	Ethylbenzene	31	D
108383	m/p Xylene	110	D

1A

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

LIFT STATION

CUSTOME MCC RECYCLING PERMIT NA-2617

LAB E P H ID # 15233 MISC RUN # 09 J 28

Matrix: (soil/water) WATER

Lab Sample ID: MCC LIFT STATIO

Sample wt/vol: 5.0 (g/ml) ML

Lab File ID: V102809M.D

Level: (low/med) LOW

Date Received: 10/27/2009

% Moisture: not dec.

Date Analyzed: 10/28/2009

GC Column: DB-624 ID: 0.32 (mm)

Dilution Factor: 5.0

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

95476	o Xylene	61	D
100-42-5	Styrene	25	U
75-25-2	Bromoform	25	U
98-82-8	Isopropylbenzene	25	U
79-34-5	1,1,2,2-Tetrachloroethane	25	U
541-73-1	1,3-Dichlorobenzene	25	U
106-46-7	1,4-Dichlorobenzene	25	U
95-50-1	1,2-Dichlorobenzene	25	U
96-12-8	1,2-Dibromo-3-Chloropropane	25	U
120-82-1	1,2,4-Trichlorobenzene	25	U #

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

LIFT STATION

CUSTOMER MCC RECYCLING PERMIT NA-2617

LAB E P H ID # 15233 MISC RUN # 09 J 28

Matrix: (soil/water) WATER Lab Sample ID: MCC LIFT STATIO

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: V102809M.D

Level: (low/med) LOW Date Received: 10/27/2009

% Moisture: not dec. Date Analyzed: 10/28/2009

GC Column: DB-624 ID: 0.32 (mm) Dilution Factor: 5.0

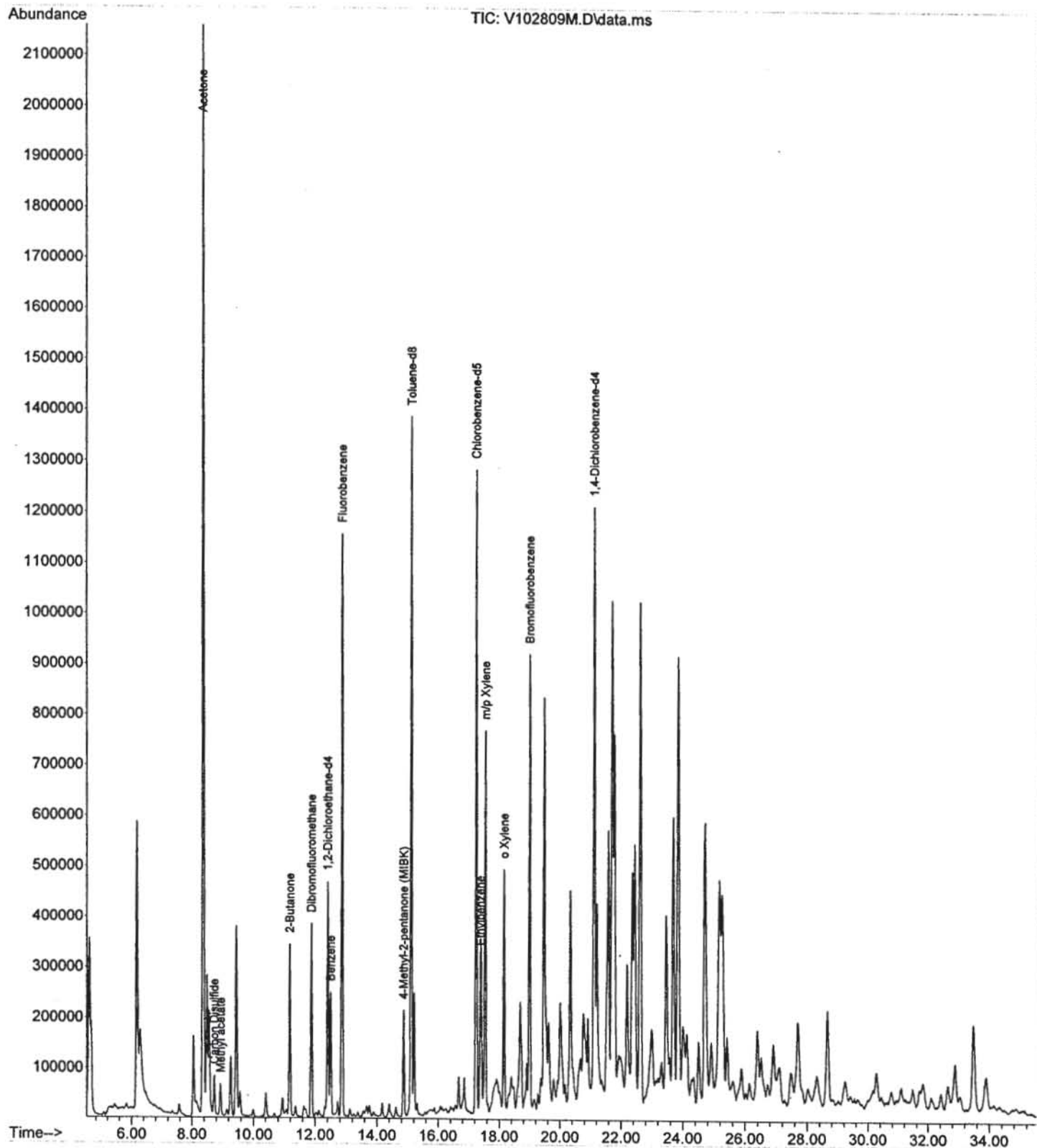
Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/LNumber TICs found: 24

CAS NO.	COMPOUND NAME	RT	EST. CONC.	Q
1.	unknown	4.58	91	JD
2. 000074-93-1	Methanethiol	6.17	150	JND
3. 000075-18-3	Dimethyl sulfide	8.49	63	JND
4. 000075-33-2	2-Propanethiol	9.44	89	JND
5.	unknown	18.68	78	JD
6. 000124-18-5	Decane	19.47	190	JND
7.	unknown	20.00	58	JD
8. 000095-63-6	Benzene, 1,2,4-trimethyl-	20.33	100	JND
9.	unknown	20.76	62	JD
10. 000526-73-8	Benzene, 1,2,3-trimethyl-	21.21	82	JND
11. 001074-43-7	Benzene, 1-methyl-3-propyl-	21.59	150	JND
12. 001758-88-9	Benzene, 2-ethyl-1,4-dimethyl-	21.70	220	JND
13. 001120-21-4	Undecane	21.78	130	JND
14. 001074-17-5	Benzene, 1-methyl-2-propyl-	22.20	64	JND
15. 001758-88-9	Benzene, 2-ethyl-1,4-dimethyl-	22.37	100	JND
16. 000535-77-3	Benzene, 1-methyl-3-(1-methyleth	22.45	110	JND
17. 000527-84-4	Benzene, 1-methyl-2-(1-methyleth	22.62	250	JND
18. 000527-84-4	Benzene, 1-methyl-2-(1-methyleth	23.47	94	JND
19. 000095-93-2	Benzene, 1,2,4,5-tetramethyl-	23.70	130	JND
20. 000488-23-3	Benzene, 1,2,3,4-tetramethyl-	23.85	220	JND
21. 000824-22-6	1H-Indene, 2,3-dihydro-4-methyl-	24.72	180	JND
22. 000488-23-3	Benzene, 1,2,3,4-tetramethyl-	25.18	120	JND
23. 001120-21-4	Undecane	28.66	65	JND
24. 001120-21-4	Undecane	33.49	65	JND

File :C:\msdchem\1\DATA\102809\V102809M.D
Operator : M. CANTU / R. VERASTEGUI
Acquired : 28 Oct 2009 5:49 pm using AcqMethod VOA.M
Instrument : VOA #1
Sample Name: MCC RECYCLING, NA-2617, ID 15233, 09 J 28
Misc Info : LIFT STATION, 1:5 DIL.
Vial Number: 27



[illegible]

ENVIRONMENTAL PUBLIC HEALTH DIVISION LABORATORY
HARRIS COUNTY PUBLIC HEALTH ENVIRONMENTAL SERVICES

Sampling / Custody Nonconformance Report

ID CWH 10/27/09 Date 10/28/09
NC Completed By Morton, Vana Collected By Hill
Run Number(s) 2009J28 Number of Samples 1
Sample ID/ Location NA-2617
Nonconformance 1: Improper preservation
Nonconformance 2:
Nonconformance Comments Not enough preservation in containers. Added more preservation for Ammonia, Metals and TOC.

Analysis Request 1

Analysis Request 2

Analysis Request 3

Analysis Request 4

Corrective Action 1 Samples preserved by lab staff

Corrective Action 2

Corrective Action 3

Impact on Data 1

Impact on Data 2

Comments on Data Impact

Field Investigator _____

Sample Administrator 

QA/QC 

Manager - Laboratory Services 

Include With Report ☒

ATTACHMENT G

ID 10291
15233

From: Accutest LabLink Gulf Coast <lablink@accutest.com>
To: <spenteco@tceq.state.tx.us>
Date: 11/12/2009 4:21 PM
Subject: Accutest e-Hardcopy 2.0 Report T40953: Region 12/Houston
Attachments: T40953.PDF

Enclosed is the e-Hardcopy 2.0 report for the following Accutest job:

T40953: Region 12/Houston
Received: 29-OCT-09 14 day TAT
TCEQ

The attached PDF file contains your report; 25 pages.
Report includes QC summaries.
The scanned chain of custody is also included in this report.

NOTE: This PDF file is an e-Hardcopy 2.0 report. It is a complete, self-contained report with bookmarks, table of contents, and section markers, all with hypertext links for ease of navigation. We believe you will find it to be the most easy to use data package in the industry.

This message is confidential and intended solely for the use of the addressee and may contain material protected by law. If you are not the intended recipient, you have received this in error and any use, dissemination, forwarding, printing, or copying of this message is prohibited.



IT'S ALL IN THE CHEMISTRY

11/12/09

Technical Report for

TCEQ

Region 12/Houston

PCA 04139/Stacey Pentecost

Accutest Job Number: T40953

Sampling Date: 10/27/09

Report to:

TCEQ

spenteco@tceq.state.tx.us

Total number of pages in report: 25



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Client Service contact: Sylvia Garza 713-271-4700

Certifications: TX (T104704220-06-TX) AR (88-0756) FL (E87628) KS (E-10366) LA (85695/04004) OK (9103) UT(7132714700)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.
Test results relate only to samples analyzed.

Paul K Canavaro

Paul Canavaro
Laboratory Director

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Sections:

1
2
3
4
5

Accutest Laboratories



Sample Summary

TCEQ

Job No: T40953

Region 12/Houston

Project No: PCA 04139/Stacey Pentecost

Sample Number	Collected Date	Time By	Received	Matrix Code Type	Client Sample ID
T40953-1	10/27/09	13:37 SP	10/29/09	AQ Water	20126-01 24" LINE BREAKS



IT'S ALL IN THE CHEMISTRY

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: 20126-01 24" LINE BREAKS

Lab Sample ID: T40953-1

Date Sampled: 10/27/09

Matrix: AQ - Water

Date Received: 10/29/09

Method: EPA 624

Percent Solids: n/a

Project: Region 12/Houston

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y0036393.D	1	11/03/09	JL	n/a	n/a	VY2347
Run #2	Y0036392.D	25	11/03/09	JL	n/a	n/a	VY2347

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	6990 *	1300	120	ug/l	
71-43-2	Benzene	24.5	2.0	0.50	ug/l	
75-27-4	Bromodichloromethane	ND	2.0	0.49	ug/l	
75-25-2	Bromoform	ND	2.0	1.4	ug/l	
108-90-7	Chlorobenzene	ND	2.0	0.56	ug/l	
75-00-3	Chloroethane	ND	2.0	0.92	ug/l	
67-66-3	Chloroform	ND	2.0	0.64	ug/l	
75-15-0	Carbon disulfide	29.9	2.0	0.53	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	0.66	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	0.52	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	9.5	2.0	0.62	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	0.62	ug/l	
124-48-1	Dibromochloromethane	ND	2.0	0.61	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	2.0	0.56	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	0.48	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	2.0	0.45	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	0.68	ug/l	
100-41-4	Ethylbenzene	25.2	2.0	0.55	ug/l	
591-78-6	2-Hexanone	ND	10	3.2	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	9.9	ug/l	
74-83-9	Methyl bromide	ND	2.0	0.94	ug/l	
74-87-3	Methyl chloride	ND	2.0	0.84	ug/l	
75-09-2	Methylene chloride	ND	5.0	0.41	ug/l	
78-93-3	Methyl ethyl ketone	303	10	3.9	ug/l	
100-42-5	Styrene	ND	2.0	0.56	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	0.62	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	1.2	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	0.98	ug/l	
127-18-4	Tetrachloroethylene	6.5	2.0	0.91	ug/l	
108-88-3	Toluene	23.1	2.0	0.43	ug/l	
79-01-6	Trichloroethylene	5.4	2.0	0.52	ug/l	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: 20126-01 24" LINE BREAKS

Lab Sample ID: T40953-1

Date Sampled: 10/27/09

Matrix: AQ - Water

Date Received: 10/29/09

Method: EPA 624

Percent Solids: n/a

Project: Region 12/Houston

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	129	6.0	1.7	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	87%	76%	73-124%
17060-07-0	1,2-Dichloroethane-D4	81%	67%	58-139%
2037-26-5	Toluene-D8	90%	77% ^b	79-126%
460-00-4	4-Bromofluorobenzene	83%	81%	68-143%

(a) Result is from Run# 2

(b) Outside control limits biased low. No target compounds associated with this surrogate are being reported from this run.

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: 20126-01 24" LINE BREAKS

Lab Sample ID: T40953-1

Date Sampled: 10/27/09

Matrix: AQ - Water

Date Received: 10/29/09

Method: EPA 625 SW846 3510C

Percent Solids: n/a

Project: Region 12/Houston

Run #1 ^a	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	J14308.D	1	11/10/09	SC	11/03/09	OP13390	EJ655
	J14307.D	20	11/10/09	SC	11/03/09	OP13390	EJ655

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2	1000 ml	1.0 ml

ABN TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	1030 ^b	200	100	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	1.2	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.0	1.2	ug/l	
120-83-2	2,4-Dichlorophenol	ND	5.0	2.2	ug/l	
105-67-9	2,4-Dimethylphenol	43.6	5.0	1.3	ug/l	
51-28-5	2,4-Dinitrophenol	ND	25	15	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	1.4	ug/l	
95-48-7	2-Methylphenol	86.4	5.0	0.83	ug/l	
	3&4-Methylphenol	196 ^b	100	32	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	2.0	ug/l	
100-02-7	4-Nitrophenol	ND	25	6.7	ug/l	
87-86-5	Pentachlorophenol	ND	25	13	ug/l	
108-95-2	Phenol	692 ^b	100	15	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.0	1.2	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	1.1	ug/l	
83-32-9	Acenaphthene	3.6	5.0	1.6	ug/l	J
208-96-8	Acenaphthylene	ND	5.0	1.2	ug/l	
120-12-7	Anthracene	ND	5.0	1.1	ug/l	
56-55-3	Benzo(a)anthracene	ND	5.0	1.1	ug/l	
50-32-8	Benzo(a)pyrene	ND	5.0	1.1	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	5.0	0.87	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	5.0	1.7	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	5.0	1.1	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	1.4	ug/l	
85-68-7	Butyl benzyl phthalate	3.7	5.0	1.6	ug/l	J
100-51-6	Benzyl Alcohol	ND	5.0	1.4	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	1.4	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	4.3	ug/l	
86-74-8	Carbazole	ND	5.0	1.5	ug/l	
218-01-9	Chrysene	1.0	5.0	0.98	ug/l	J
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	1.3	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	1.3	ug/l	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: 20126-01 24" LINE BREAKS

Lab Sample ID: T40953-1

Date Sampled: 10/27/09

Matrix: AQ - Water

Date Received: 10/29/09

Method: EPA 625 SW846 3510C

Percent Solids: n/a

Project: Region 12/Houston

ABN TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	2.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	1.3	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	5.0	1.3	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	5.0	1.3	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	5.0	1.3	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	5.0	1.4	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	5.0	1.3	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	10	3.2	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	5.0	1.6	ug/l	
132-64-9	Dibenzofuran	ND	5.0	1.3	ug/l	
84-74-2	Di-n-butyl phthalate	3.2	5.0	1.0	ug/l	J
117-84-0	Di-n-octyl phthalate	ND	5.0	1.3	ug/l	
84-66-2	Diethyl phthalate	ND	5.0	1.1	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	1.1	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	7.7	5.0	1.8	ug/l	
206-44-0	Fluoranthene	ND	5.0	0.97	ug/l	
86-73-7	Fluorene	2.6	5.0	1.3	ug/l	J
118-74-1	Hexachlorobenzene	ND	5.0	1.3	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	1.1	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	5.2	ug/l	
67-72-1	Hexachloroethane	ND	5.0	0.97	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	5.0	1.8	ug/l	
78-59-1	Isophorone	ND	5.0	1.2	ug/l	
91-57-6	2-Methylnaphthalene	31.9	5.0	1.3	ug/l	
88-74-4	2-Nitroaniline	ND	5.0	1.4	ug/l	
99-09-2	3-Nitroaniline	ND	5.0	3.3	ug/l	
100-01-6	4-Nitroaniline	ND	5.0	2.3	ug/l	
91-20-3	Naphthalene	34.1	5.0	1.1	ug/l	
98-95-3	Nitrobenzene	ND	5.0	1.7	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	1.4	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	1.7	ug/l	
85-01-8	Phenanthrene	4.3	5.0	0.97	ug/l	J
129-00-0	Pyrene	2.9	5.0	1.7	ug/l	J
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	1.3	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	21%	27%	10-66%
4165-62-2	Phenol-d5	30%	17%	10-53%
118-79-6	2,4,6-Tribromophenol	58%	53%	32-128%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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2.1
2

Client Sample ID:	20126-01 24" LINE BREAKS	Date Sampled:	10/27/09
Lab Sample ID:	T40953-1	Date Received:	10/29/09
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	EPA 625 SW846 3510C		
Project:	Region 12/Houston		

ABN TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	64%	52%	29-115%
321-60-8	2-Fluorobiphenyl	58%	49%	34-113%
1718-51-0	Terphenyl-d14	114%	67%	12-145%

- (a) Internal standards are not within the advisory limits due to a matrix interference. Confirmed by reanalysis.
(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound



Gulf Coast

ACCUTEST.

Laboratories



IT'S ALL IN THE CHEMISTRY

Section 3

3

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody



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ACCUTEST.

T40953

LABORATORIES

Location								Date		
(Do not fill in unless waived by EPA; activity information must be confidential)										
Region: 12	Organization #: 04212	PCA Code: 0439	Program: Water-60	Sampler telephone number: 713-767-3667						
E-Mail ID: spintero	Sampler: (signature) <i>Stacy S. Pentecost</i>			Sampler: (please print clearly) Stacy S. Pentecost						
Sample ID	Date	Time	# of Bottles	Grab/ Comp.	Matrix L,S,M,O,T	CL2	pH	Cond.	Analyses Requested	REMARKS
-01 & -02 SP	12-13-05	13:35	5	G	L				volatiles semi-volatiles II II II	Volatiles not identified use wastewater methods
-03										
-04										
-05										
-06										
-07										
-08										
-09										
-10										
Relinquished by: <i>Stacy S. Pentecost</i>	Date:	Time:	Received by: <i>Jen Marshall</i>		Laboratory Use Only <input type="checkbox"/> Residuals <input type="checkbox"/> Preservatives <input checked="" type="checkbox"/> COC/Sea <input type="checkbox"/> Seals Intact					
Relinquished by:	Date:	Time:	Received by:							
Relinquished by:	Date:	Time:	Received by:							
Relinquished by:	Date:	Time:	Received by:							
Shipper name:	Shipper Number:									

3.1

SAMPLE INSPECTION FORM

Accutest Job Number: T40953 Client: TLEQ Date/Time Received: 10/29/09 16:28

of Coolers Received: 1 Thermometer #: 10-1 Temperature Adjustment Factor: +0.4

Cooler Temps: #1: 4.1 #2: #3: #4: #5: #6: #7: #8:

Method of Delivery: FEDEX UPS Accutest Courier Greyhound Delivery Other

Airbill Numbers:

COOLER INFORMATION

- ☐ Custody seal missing or not intact
- ☐ Temperature criteria not met
- ☐ Wet ice received in cooler

CHAIN OF CUSTODY

- ☐ Chain of Custody not received
- ☐ Sample D/T unclear or missing
- ☐ Analyses unclear or missing
- ☐ COC not properly executed

SAMPLE INFORMATION

- ☐ Sample containers received broken
- ☐ VOC vials have headspace
- ☐ Sample labels missing or illegible
- ☐ ID on COC does not match label(s)
- ☐ D/T on COC does not match label(s)
- ☐ Sample/Bottles rec'd but no analysis on COC
- ☐ Sample listed on COC, but not received
- ☐ Bottles missing for requested analysis
- ☐ Insufficient volume for analysis
- ☐ Sample received improperly preserved

TRIP BLANK INFORMATION

- ☐ Trip Blank on COC but not received
- ☐ Trip Blank received but not on COC
- ☐ Trip Blank not intact
- ☐ Received Water Trip Blank
- ☐ Received Soil TB

Number of Encores?

Number of 5035 kits?

Number of lab-filtered metals?

Summary of Discrepancies:

TECHNICIAN SIGNATURE/DATE: [Signature] 10/27/09

INFORMATION AND SAMPLE LABELING VERIFIED BY: GC 10297

CORRECTIVE ACTIONS

Client Representative Notified: Date:

By Accutest Representative: Via: Phone Email

Client Instructions:

Investigator/Inspector/Manager

T40953: Chain of Custody

Page 2 of 3

SAMPLE RECEIPT LOG

JOB #: T 4953 DATE/TIME RECEIVED: 12/22/07 1638
CLIENT: ICCA INITIALS: CF

[illegible]

PRESERVATIVES: 1: None 2: HCL 3: HNO3 4: H2SO4 5: NaOH 6: DI 7: MeOH 8: Other
 LOCATION: 1: Walk-in #1 (Waters) 2: Walk-in #2 (Soils) VR: Volatile Fridge M: Metals SUB: Subcontract EF: Encore Freezer
 Rev 8/13/01 ewp

T40953: Chain of Custody
Page 3 of 3



IT'S ALL IN THE CHEMISTRY

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 2

Job Number: T40953
Account: TNR TCEQ
Project: Region 12/Houston

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VY2347-MB	Y0036389.D	1	11/03/09	JL	n/a	n/a	VY2347

The QC reported here applies to the following samples:

Method: EPA 624

T40953-1

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	4.7	ug/l	
71-43-2	Benzene	ND	2.0	0.50	ug/l	
75-27-4	Bromodichloromethane	ND	2.0	0.49	ug/l	
75-25-2	Bromoform	ND	2.0	1.4	ug/l	
108-90-7	Chlorobenzene	ND	2.0	0.56	ug/l	
75-00-3	Chloroethane	ND	2.0	0.92	ug/l	
67-66-3	Chloroform	ND	2.0	0.64	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.53	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	0.66	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	0.52	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	0.62	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	0.62	ug/l	
124-48-1	Dibromochloromethane	ND	2.0	0.61	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	2.0	0.56	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	0.48	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	2.0	0.45	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	0.68	ug/l	
100-41-4	Ethylbenzene	ND	2.0	0.55	ug/l	
591-78-6	2-Hexanone	ND	10	3.2	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	9.9	ug/l	
74-83-9	Methyl bromide	ND	2.0	0.94	ug/l	
74-87-3	Methyl chloride	ND	2.0	0.84	ug/l	
75-09-2	Methylene chloride	ND	5.0	0.41	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	3.9	ug/l	
100-42-5	Styrene	ND	2.0	0.56	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	0.62	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	1.2	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	0.98	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	0.91	ug/l	
108-88-3	Toluene	ND	2.0	0.43	ug/l	
79-01-6	Trichloroethylene	ND	2.0	0.52	ug/l	
75-01-4	Vinyl chloride	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	1.7	ug/l	

Method Blank Summary

Page 2 of 2

Job Number: T40953
Account: TNR TCEQ
Project: Region 12/Houston

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VY2347-MB	Y0036389.D	1	11/03/09	JL	n/a	n/a	VY2347

The QC reported here applies to the following samples:

Method: EPA 624

T40953-1

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	87%	73-124%
17060-07-0	1,2-Dichloroethane-D4	76%	58-139%
2037-26-5	Toluene-D8	87%	79-126%
460-00-4	4-Bromofluorobenzene	94%	68-143%



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ACCUTEST
T40953 LABORATORIES

Blank Spike/Blank Spike Duplicate Summary

Page 1 of 2

Job Number: T40953
Account: TNR TCEQ
Project: Region 12/Houston

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VY2347-BS	Y0036388.D 1		11/03/09	JL	n/a	n/a	VY2347
VY2347-BSD	Y0036390.D 1		11/03/09	JL	n/a	n/a	VY2347

The QC reported here applies to the following samples:

Method: EPA 624

T40953-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	125	91.4	73	83.6	67	9	59-121/30
71-43-2	Benzene	25	21.8	87	20.7	83	5	77-111/30
75-27-4	Bromodichloromethane	25	21.3	85	20.5	82	4	67-102/30
75-25-2	Bromoform	25	19.9	80	19.8	79	1	53-116/30
108-90-7	Chlorobenzene	25	22.0	88	21.4	86	3	76-108/30
75-00-3	Chloroethane	25	20.3	81	19.9	80	2	71-128/30
67-66-3	Chloroform	25	23.4	94	22.1	88	6	77-112/30
75-15-0	Carbon disulfide	25	21.6	86	20.1	80	7	35-172/30
56-23-5	Carbon tetrachloride	25	23.5	94	21.2	85	10	75-121/30
75-34-3	1,1-Dichloroethane	25	21.9	88	20.8	83	5	79-115/30
75-35-4	1,1-Dichloroethylene	25	26.0	104	23.2	93	11	72-120/30
107-06-2	1,2-Dichloroethane	25	22.2	89	21.2	85	5	69-110/30
78-87-5	1,2-Dichloropropane	25	21.5	86	20.8	83	3	75-109/30
124-48-1	Dibromochloromethane	25	20.9	84	20.7	83	1	65-105/30
156-59-2	cis-1,2-Dichloroethylene	25	22.5	90	21.3	85	5	70-105/30
10061-01-5	cis-1,3-Dichloropropene	25	21.1	84	20.3	81	4	71-110/30
156-60-5	trans-1,2-Dichloroethylene	25	24.2	97	22.1	88	9	76-116/30
10061-02-6	trans-1,3-Dichloropropene	25	21.9	88	21.4	86	2	73-115/30
100-41-4	Ethylbenzene	25	22.2	89	21.1	84	5	78-109/30
591-78-6	2-Hexanone	125	85.8	69	84.3	67	2	56-116/30
108-10-1	4-Methyl-2-pentanone	125	91.8	73	91.2	73	1	62-116/30
74-83-9	Methyl bromide	25	21.0	84	19.8	79	6	61-126/30
74-87-3	Methyl chloride	25	23.0	92	22.0	88	4	54-144/30
75-09-2	Methylene chloride	25	22.2	89	21.3	85	4	68-109/30
78-93-3	Methyl ethyl ketone	125	88.5	71	84.0	67	5	59-116/30
100-42-5	Styrene	25	20.0	80	19.0	76	5	67-106/30
71-55-6	1,1,1-Trichloroethane	25	23.5	94	21.2	85	10	75-120/30
79-34-5	1,1,2,2-Tetrachloroethane	25	20.5	82	20.7	83	1	65-111/30
79-00-5	1,1,2-Trichloroethane	25	20.7	83	20.9	84	1	70-105/30
127-18-4	Tetrachloroethylene	25	24.1	96	22.5	90	7	75-117/30
108-88-3	Toluene	25	22.2	89	21.2	85	5	79-109/30
79-01-6	Trichloroethylene	25	23.7	95	22.2	89	7	76-112/30
75-01-4	Vinyl chloride	25	24.5	98	22.2	89	10	60-143/30
1330-20-7	Xylene (total)	75	66.1	88	62.8	84	5	77-111/30

4.2.1
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Blank Spike/Blank Spike Duplicate Summary

Page 2 of 2

Job Number: T40953
Account: TNR TCEQ
Project: Region 12/Houston

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VY2347-BS	Y0036388.D	1	11/03/09	JL	n/a	n/a	VY2347
VY2347-BSD	Y0036390.D	1	11/03/09	JL	n/a	n/a	VY2347

The QC reported here applies to the following samples:

Method: EPA 624

T40953-1

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	107%	86%	73-124%
17060-07-0	1,2-Dichloroethane-D4	106%	78%	58-139%
2037-26-5	Toluene-D8	97%	88%	79-126%
460-00-4	4-Bromofluorobenzene	110%	92%	68-143%



IT'S ALL IN THE CHEMISTRY

GC/MS Semi-volatiles

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QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 3

Job Number: T40953
Account: TNR TCEQ
Project: Region 12/Houston

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP13390-MB	J14303.D	1	11/10/09	SC	11/03/09	OP13390	EJ655

The QC reported here applies to the following samples:

Method: EPA 625

T40953-1

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	10	5.0	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	1.2	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.0	1.2	ug/l	
120-83-2	2,4-Dichlorophenol	ND	5.0	2.2	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.0	1.3	ug/l	
51-28-5	2,4-Dinitrophenol	ND	25	15	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	1.4	ug/l	
95-48-7	2-Methylphenol	ND	5.0	0.83	ug/l	
	3&4-Methylphenol	ND	5.0	1.6	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	2.0	ug/l	
100-02-7	4-Nitrophenol	ND	25	6.7	ug/l	
87-86-5	Pentachlorophenol	ND	25	13	ug/l	
108-95-2	Phenol	ND	5.0	0.75	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.0	1.2	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	1.1	ug/l	
83-32-9	Acenaphthene	ND	5.0	1.6	ug/l	
208-96-8	Acenaphthylene	ND	5.0	1.2	ug/l	
120-12-7	Anthracene	ND	5.0	1.1	ug/l	
56-55-3	Benzo(a)anthracene	ND	5.0	1.1	ug/l	
50-32-8	Benzo(a)pyrene	ND	5.0	1.1	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	5.0	0.87	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	5.0	1.7	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	5.0	1.1	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	1.4	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	1.6	ug/l	
100-51-6	Benzyl Alcohol	ND	5.0	1.4	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	1.4	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	4.3	ug/l	
86-74-8	Carbazole	ND	5.0	1.5	ug/l	
218-01-9	Chrysene	ND	5.0	0.98	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	1.3	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	1.3	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	2.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	1.3	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	5.0	1.3	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	5.0	1.3	ug/l	

Method Blank Summary

Page 2 of 3

Job Number: T40953
Account: TNR TCEQ
Project: Region 12/Houston

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP13390-MB	J14303.D	1	11/10/09	SC	11/03/09	OP13390	EJ655

The QC reported here applies to the following samples:

Method: EPA 625

T40953-1

CAS No.	Compound	Result	RL	MDL	Units	Q
106-46-7	1,4-Dichlorobenzene	ND	5.0	1.3	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	5.0	1.4	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	5.0	1.3	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	10	3.2	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	5.0	1.6	ug/l	
132-64-9	Dibenzofuran	ND	5.0	1.3	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.0	1.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	1.3	ug/l	
84-66-2	Diethyl phthalate	ND	5.0	1.1	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	1.1	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	5.0	1.8	ug/l	
206-44-0	Fluoranthene	ND	5.0	0.97	ug/l	
86-73-7	Fluorene	ND	5.0	1.3	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	1.3	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	1.1	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	5.2	ug/l	
67-72-1	Hexachloroethane	ND	5.0	0.97	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	5.0	1.8	ug/l	
78-59-1	Isophorone	ND	5.0	1.2	ug/l	
91-57-6	2-Methylnaphthalene	ND	5.0	1.3	ug/l	
88-74-4	2-Nitroaniline	ND	5.0	1.4	ug/l	
99-09-2	3-Nitroaniline	ND	5.0	3.3	ug/l	
100-01-6	4-Nitroaniline	ND	5.0	2.3	ug/l	
91-20-3	Naphthalene	ND	5.0	1.1	ug/l	
98-95-3	Nitrobenzene	ND	5.0	1.7	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	1.4	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	1.7	ug/l	
85-01-8	Phenanthrene	ND	5.0	0.97	ug/l	
129-00-0	Pyrene	ND	5.0	1.7	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	1.3	ug/l	

CAS No.	Surrogate Recoveries	Limits
367-12-4	2-Fluorophenol	37% 10-66%
4165-62-2	Phenol-d5	28% 10-53%

Method Blank Summary

Page 3 of 3

Job Number: T40953
Account: TNR TCEQ
Project: Region 12/Houston

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP13390-MB	J14303.D	1	11/10/09	SC	11/03/09	OP13390	EJ655

The QC reported here applies to the following samples:

Method: EPA 625

T40953-1

CAS No.	Surrogate Recoveries		Limits
118-79-6	2,4,6-Tribromophenol	67%	32-128%
4165-60-0	Nitrobenzene-d5	69%	29-115%
321-60-8	2-Fluorobiphenyl	65%	34-113%
1718-51-0	Terphenyl-d14	92%	12-145%

5.1.1

5

Blank Spike/Blank Spike Duplicate Summary

Page 1 of 3

Job Number: T40953
 Account: TNR TCEQ
 Project: Region 12/Houston

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP13390-BS	J14305.D	1	11/10/09	SC	11/03/09	OP13390	EJ655
OP13390-BSD	J14306.D	1	11/10/09	SC	11/03/09	OP13390	EJ655

The QC reported here applies to the following samples:

Method: EPA 625

T40953-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic Acid	50	25.7	51	28.1	56	9	10-68/30
95-57-8	2-Chlorophenol	50	36.9	74	37.1	74	1	39-93/30
59-50-7	4-Chloro-3-methyl phenol	50	40.7	81	41.2	82	1	43-109/30
120-83-2	2,4-Dichlorophenol	50	40.5	81	41.3	83	2	42-106/30
105-67-9	2,4-Dimethylphenol	50	31.2	62	31.8	64	2	27-87/30
51-28-5	2,4-Dinitrophenol	50	37.9	76	38.5	77	2	43-107/30
534-52-1	4,6-Dinitro-o-cresol	50	44.1	88	44.8	90	2	47-112/30
95-48-7	2-Methylphenol	50	32.5	65	32.4	65	0	25-84/30
	3&4-Methylphenol	100	59.5	60	59.4	59	0	25-77/30
88-75-5	2-Nitrophenol	50	39.7	79	40.6	81	2	38-96/30
100-02-7	4-Nitrophenol	50	19.7	39	19.5	39	1	13-70/30
87-86-5	Pentachlorophenol	50	41.6	83	42.0	84	1	46-153/30
108-95-2	Phenol	50	18.0	36	18.0	36	0	10-53/30
95-95-4	2,4,5-Trichlorophenol	50	42.0	84	42.2	84	0	40-101/30
88-06-2	2,4,6-Trichlorophenol	50	41.1	82	40.9	82	0	41-102/30
83-32-9	Acenaphthene	50	41.1	82	40.8	82	1	41-110/30
208-96-8	Acenaphthylene	50	41.4	83	41.5	83	0	49-113/30
120-12-7	Anthracene	50	43.9	88	43.7	87	0	59-105/30
56-55-3	Benzo(a)anthracene	50	47.1	94	46.9	94	0	64-112/30
50-32-8	Benzo(a)pyrene	50	43.4	87	43.7	87	1	62-116/30
205-99-2	Benzo(b)fluoranthene	50	44.2	88	44.7	89	1	62-114/30
191-24-2	Benzo(g,h,i)perylene	50	47.3	95	47.3	95	0	55-124/30
207-08-9	Benzo(k)fluoranthene	50	49.7	99	50.5	101	2	62-119/30
101-55-3	4-Bromophenyl phenyl ether	50	40.5	81	40.4	81	0	56-99/30
85-68-7	Butyl benzyl phthalate	50	52.2	104	51.5	103	1	52-125/30
100-51-6	Benzyl Alcohol	50	34.0	68	33.7	67	1	28-83/30
91-58-7	2-Chloronaphthalene	50	27.9	56	28.1	56	1	42-97/30
106-47-8	4-Chloroaniline	50	31.8	64	31.9	64	0	37-128/30
86-74-8	Carbazole	50	40.6	81	41.1	82	1	59-142/30
218-01-9	Chrysene	50	48.3	97	48.6	97	1	67-112/30
111-91-1	bis(2-Chloroethoxy)methane	50	33.1	66	33.4	67	1	38-96/30
111-44-4	bis(2-Chloroethyl)ether	50	42.9	86	43.0	86	0	37-91/30
108-60-1	bis(2-Chloroisopropyl)ether	50	40.0	80	39.5	79	1	36-102/30
7005-72-3	4-Chlorophenyl phenyl ether	50	42.3	85	42.4	85	0	48-101/30
95-50-1	1,2-Dichlorobenzene	50	31.0	62	30.6	61	1	33-86/30
541-73-1	1,3-Dichlorobenzene	50	28.9	58	28.9	58	0	21-88/30

Blank Spike/Blank Spike Duplicate Summary

Page 2 of 3

Job Number: T40953
 Account: TNR TCEQ
 Project: Region 12/Houston

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP13390-BS	J14305.D	1	11/10/09	SC	11/03/09	OP13390	EJ655
OP13390-BSD	J14306.D	1	11/10/09	SC	11/03/09	OP13390	EJ655

The QC reported here applies to the following samples:

Method: EPA 625

T40953-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
106-46-7	1,4-Dichlorobenzene	50	29.5	59	29.4	59	0	31-86/30
121-14-2	2,4-Dinitrotoluene	50	49.9	100	49.5	99	1	55-112/30
606-20-2	2,6-Dinitrotoluene	50	46.2	92	46.1	92	0	57-105/30
91-94-1	3,3'-Dichlorobenzidine	50	29.3	59	29.0	58	1	50-142/30
53-70-3	Dibenzo(a,h)anthracene	50	46.4	93	46.2	92	0	55-123/30
132-64-9	Dibenzofuran	50	43.5	87	43.7	87	0	45-99/30
84-74-2	Di-n-butyl phthalate	50	46.0	92	45.5	91	1	64-114/30
117-84-0	Di-n-octyl phthalate	50	50.8	102	52.3	105	3	55-118/30
84-66-2	Diethyl phthalate	50	50.6	101	50.3	101	1	52-113/30
131-11-3	Dimethyl phthalate	50	46.3	93	46.0	92	1	38-112/30
117-81-7	bis(2-Ethylhexyl)phthalate	50	50.5	101	49.2	98	3	56-131/30
206-44-0	Fluoranthene	50	48.9	98	48.8	98	0	62-116/30
86-73-7	Fluorene	50	45.1	90	44.7	89	1	47-99/30
118-74-1	Hexachlorobenzene	50	43.2	86	43.2	86	0	62-102/30
87-68-3	Hexachlorobutadiene	50	30.3	61	29.8	60	2	37-91/30
77-47-4	Hexachlorocyclopentadiene	50	25.4	51	27.2	54	7	23-102/30
67-72-1	Hexachloroethane	50	31.2	62	31.5	63	1	33-86/30
193-39-5	Indeno(1,2,3-cd)pyrene	50	48.3	97	48.1	96	0	52-126/30
78-59-1	Isophorone	50	42.5	85	42.5	85	0	42-105/30
91-57-6	2-Methylnaphthalene	50	38.1	76	38.2	76	0	36-91/30
88-74-4	2-Nitroaniline	50	43.8	88	44.1	88	1	49-109/30
99-09-2	3-Nitroaniline	50	43.4	87	43.7	87	1	46-139/30
100-01-6	4-Nitroaniline	50	43	86	44	88	3	73-174/30
91-20-3	Naphthalene	50	36.2	72	36.4	73	1	37-89/30
98-95-3	Nitrobenzene	50	41.1	82	40.9	82	0	42-97/30
621-64-7	N-Nitroso-di-n-propylamine	50	45.7	91	45.8	92	0	42-102/30
86-30-6	N-Nitrosodiphenylamine	50	34.7	69	34.5	69	1	64-119/30
85-01-8	Phenanthrene	50	43.8	88	43.1	86	2	59-103/30
129-00-0	Pyrene	50	47.7	95	48.4	97	1	58-110/30
120-82-1	1,2,4-Trichlorobenzene	50	31.3	63	31.4	63	0	37-88/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
367-12-4	2-Fluorophenol	45%	45%	10-66%
4165-62-2	Phenol-d5	31%	31%	10-53%

Blank Spike/Blank Spike Duplicate Summary

Page 3 of 3

Job Number: T40953
Account: TNR TCEQ
Project: Region 12/Houston

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP13390-BS	J14305.D	1	11/10/09	SC	11/03/09	OP13390	EJ655
OP13390-BSD	J14306.D	1	11/10/09	SC	11/03/09	OP13390	EJ655

The QC reported here applies to the following samples:

Method: EPA 625

T40953-1

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
118-79-6	2,4,6-Tribromophenol	85%	84%	32-128%
4165-60-0	Nitrobenzene-d5	82%	83%	29-115%
321-60-8	2-Fluorobiphenyl	80%	80%	34-113%
1718-51-0	Terphenyl-d14	98%	98%	12-145%

5.2.1

5

Reference 17:

Gulf Coast ACCUTEST Laboratory. Technical Report for Weston Solutions: US Oil Recovery. August 17, 2010. 196 pages.

From: <Adams.Adam@epamail.epa.gov>
To: LTran@tceq.state.tx.us
CC: Rebecca.Ayres@WestonSolutions.com; Derrick.Cobb@WestonSolutions.com
Date: 1/13/2011 12:07 PM
Subject: Re: MCC Recycling: Questions about the sampling

Lam,

Sorry I wasn't able to get back to you yesterday.

The MCC-WW01-100707 sample was collected from piping inside the pumphouse, where pumps were removed by USOR/MCC personnel prior to our arrival. It was leaking and running down into the bayou and staining the vegetation. It was not from a monitor well, but from a leaking pipe sticking out of the floor.

The MCC-WW08-11-100712 was collected from the Primary Clarifier and not the High Rate Trickling Filter as shown on Figure 2-3.

Hope this helps. let me know if you need any further information.

Adam Adams
On Scene Coordinator
US Environmental Protection Agency
1445 Ross Avenue, Dallas, TX 75202
Superfund, 6SF-PR
214-665-2779 (o) / 214-202-6952 (c)
EPA R6 Hotline - 866 - EPA-SPIL (866-372-7745)
National Response Center - 800-424-8802

From:
"Lam Tran" <LTran@tceq.state.tx.us>
To:
Adam Adams/R6/USEPA/US@EPA
Date:
01/12/2011 03:40 PM
Subject:
MCC Recycling: Questions about the sampling

Hello Adam,

I am working on the Preliminary Assessment for MCC Recycling and I am trying to figure out a few things from the "AssessmentAnalytical.pdf".

1. Sample ID # MCC-WW08-11-100712 shown on FIGURE 2-3 SAMPLE LOCATION MAP.

Did the contractor sampled at the High Rate Trickling Filter or was it at the Primary Clarifier? I am checking if the map is correct or not because the trickling filter was full of rock and gravel.

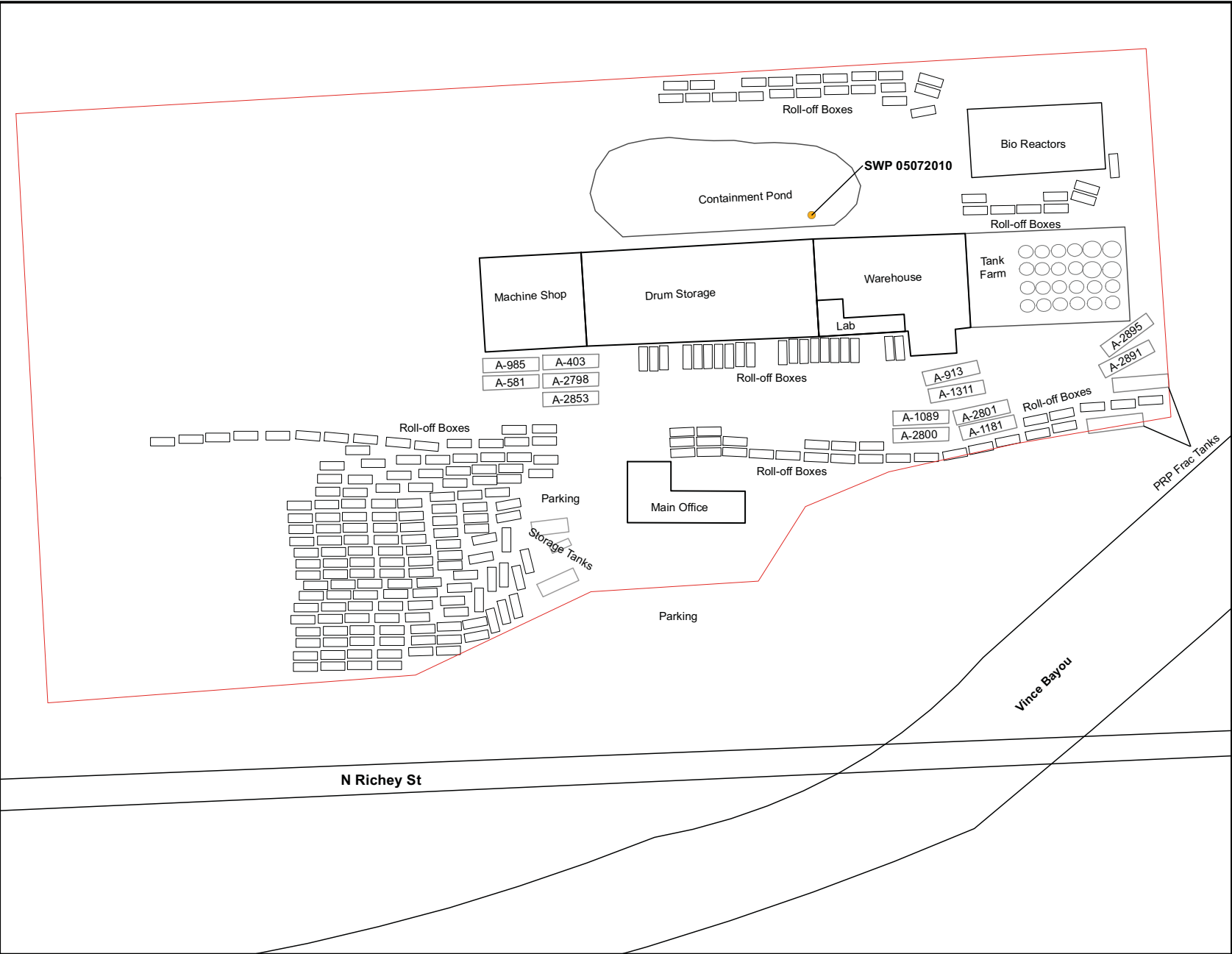
2. Sample ID # MCC-WW01-100707 shown on FIGURE 2-3 SAMPLE LOCATION MAP.

The Report of Analysis stated that it's a groundwater matrix. Is that an error?

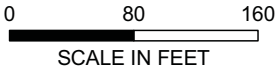
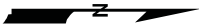
Thanks,

Lam Tran |Superfund |Remediation Division |TCEQ
LTran@tceq.state.tx.us |713.767.3559

[attachment "AssessmentAnalytical.pdf" deleted by Adam Adams/R6/USEPA/US]



- LEGEND**
- SITE BOUNDARY
 - SAMPLE LOCATION



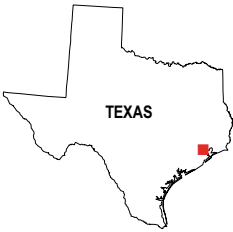
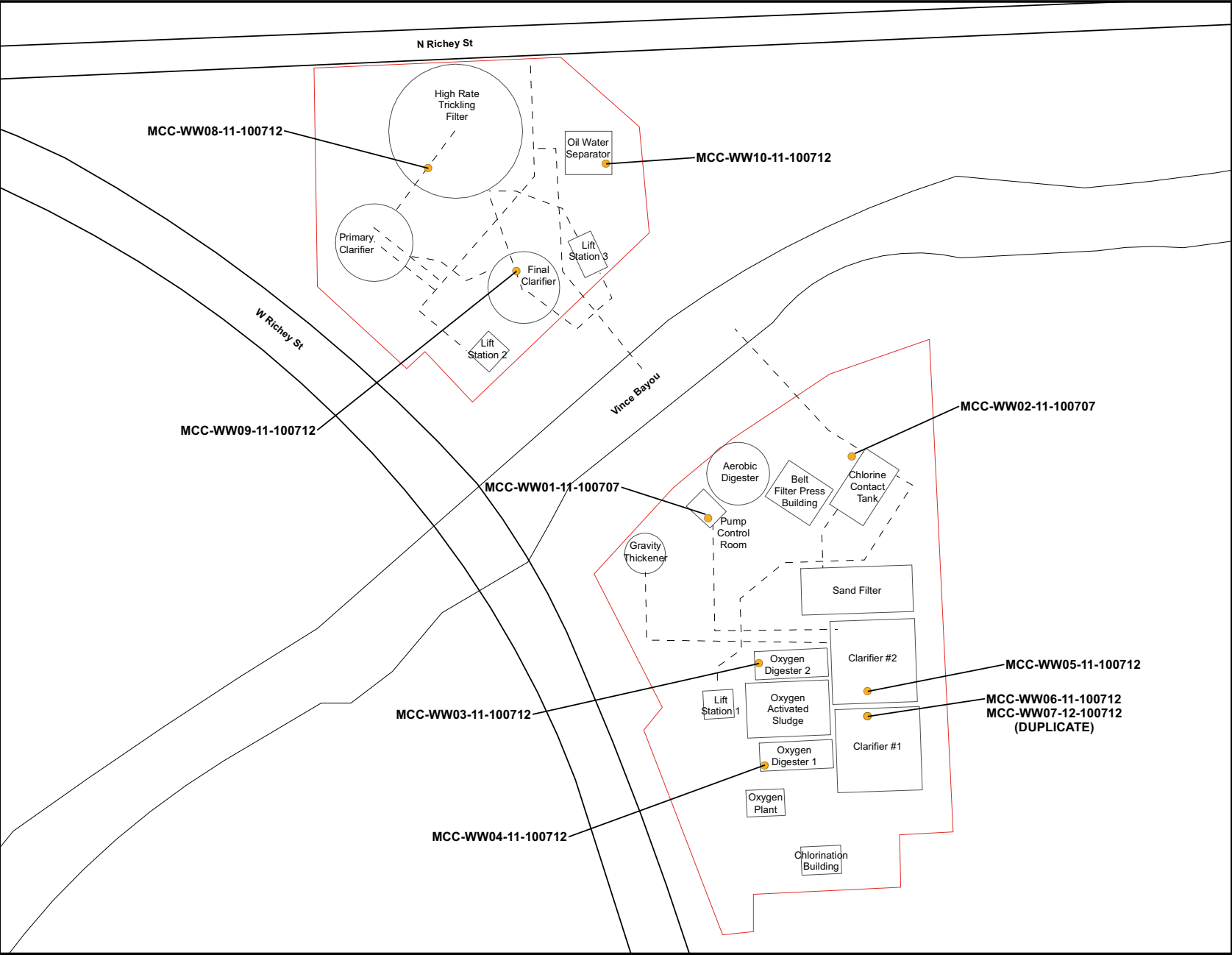
TDD NO: TO-0001-10-07-02
NRC NO: 946255



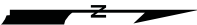
**US EPA REGION 6
START- 3**

**FIGURE 1-3
SAMPLE LOCATION MAP
US OIL RECOVERY
PASADENA, HARRIS COUNTY, TEXAS**

DATE JULY 2010	PROJECT NO 20406.012.001.0570.01	SCALE AS SHOWN
-------------------	-------------------------------------	-------------------



- LEGEND**
- SITE BOUNDARY
 - APPROXIMATE PIPELINE LOCATION
 - SAMPLE LOCATIONS



0 90 180
SCALE IN FEET

TDD NO: TO-0001-10-07-02
NRC NO: 946255



**US EPA REGION 6
START- 3**

**FIGURE 2-3
SAMPLE LOCATION MAP
US OIL RECOVERY - MCC FACILITY
PASADENA, HARRIS COUNTY, TEXAS**

DATE JULY 2010	PROJECT NO 20406.012.001.0570.01	SCALE AS SHOWN
-------------------	-------------------------------------	-------------------



08/17/10

Technical Report for

Weston Solutions

US Oil Recovery/400 North Richey, Pasadena, TX

Accutest Job Number: T55622

Sampling Date: 07/05/10

Report to:

Weston Solutions

kettlerk@westonsolutions.com

ATTN: Kristie Kettler

Total number of pages in report: 45



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Paul Canevaro
Laboratory Director

Client Service contact: Sylvia Garza 713-271-4700

Certifications: TX (T104704220-09C-TX) AR (88-0756) FL (E87628) KS (E-10366) LA (85695/04004)
OK (9103) UT(7132714700)

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Test results relate only to samples analyzed.

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Sample Summary

Weston Solutions

Job No: T55622

US Oil Recovery/400 North Richey, Pasadena, TX

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
T55622-1	07/05/10	15:45	07/06/10	AQ	Surface Water	SWP-05072010
T55622-2	07/05/10	00:00	07/06/10	AQ	Trip Blank Water	SWP-05072010-TB

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Weston Solutions

Job No T55622

Site: US Oil Recovery/400 North Richey, Pasadena, TX

Report Date 7/8/2010 3:11:13 PM

1 Sample(s) and 1 Trip Blank(s) were collected on 07/05/2010 and were received at Accutest on 07/06/2010 properly preserved, at 1 Deg. C and intact. These Samples received an Accutest job number of T55622. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix AQ	Batch ID: VC471
------------------	------------------------

- All samples were analyzed within the recommended method holding time.
- Sample(s) T55607-3MS, T55607-3MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Matrix Spike Recovery(s) for 2-Hexanone, 4-Methyl-2-pentanone are outside control limits. Probable cause due to matrix interference.
- Matrix Spike Duplicate Recovery(s) for 2-Hexanone, 4-Methyl-2-pentanone, Chloroethane are outside control limits. Probable cause due to matrix interference.

Extractables by GCMS By Method SW846 8270C

Matrix AQ	Batch ID: OP15289
------------------	--------------------------

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) T55607-3MS, T55607-3MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Matrix Spike Recovery(s) for 3,3'-Dichlorobenzidine, 4-Nitroaniline, Nitrobenzene are outside control limits. Probable cause due to matrix interference.
- Matrix Spike Duplicate Recovery(s) for 2,4-Dinitrophenol, 3,3'-Dichlorobenzidine, 4,6-Dinitro-o-cresol, 4-Nitroaniline are outside control limits. Probable cause due to matrix interference.
- RPD(s) for MSD for 2,4-Dinitrophenol, 4,6-Dinitro-o-cresol, Benzoic Acid are outside control limits for sample OP15289-MSD. Probable cause due to sample homogeneity.

Metals By Method SW846 6010B

Matrix AQ	Batch ID: MP12217
------------------	--------------------------

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) T55607-3DUP, T55607-3MS, T55607-3MSD, T55607-3SDL, T55607-3DUP were used as the QC samples for metals.
- Matrix Spike Recovery(s) for Silver, Zinc are outside control limits. Spike recovery indicates possible matrix interference.
- Matrix Spike Duplicate Recovery(s) for Silver are outside control limits. Probable cause due to matrix interference.
- Matrix Spike Recovery(s) for Magnesium, Potassium, Sodium are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- RPD(s) for Duplicate for Arsenic, Beryllium, Cadmium, Nickel, Selenium, Zinc are outside control limits for sample MP12217-D1. RPD acceptable due to low duplicate and sample concentrations.
- RPD(s) for Serial Dilution for Arsenic, Beryllium, Cadmium, Cobalt, Copper, Selenium, Zinc are outside control limits for sample MP12217-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

Metals By Method SW846 7470A

Matrix AQ	Batch ID: MP12218
------------------	--------------------------

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) T55555-1DUP, T55555-1MS, T55555-1MSD were used as the QC samples for metals.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used



Sample Results

Report of Analysis

Report of Analysis

Page 1 of 2

3.1
3**Client Sample ID:** SWP-05072010**Lab Sample ID:** T55622-1**Date Sampled:** 07/05/10**Matrix:** AQ - Surface Water**Date Received:** 07/06/10**Method:** SW846 8260B**Percent Solids:** n/a**Project:** US Oil Recovery/400 North Richey, Pasadena, TX

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C0010586.D	1	07/06/10	RR	n/a	n/a	VC471
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
67-64-1	Acetone	8.2	50	4.7	ug/l	J
71-43-2	Benzene	0.50 U	2.0	0.50	ug/l	
75-27-4	Bromodichloromethane	0.49 U	2.0	0.49	ug/l	
75-25-2	Bromoform	1.4 U	2.0	1.4	ug/l	
108-90-7	Chlorobenzene	0.56 U	2.0	0.56	ug/l	
75-00-3	Chloroethane	0.92 U	2.0	0.92	ug/l	
67-66-3	Chloroform	0.64 U	2.0	0.64	ug/l	
75-15-0	Carbon disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon tetrachloride	0.66 U	2.0	0.66	ug/l	
75-34-3	1,1-Dichloroethane	0.52 U	2.0	0.52	ug/l	
75-35-4	1,1-Dichloroethylene	0.50 U	2.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	0.62 U	2.0	0.62	ug/l	
78-87-5	1,2-Dichloropropane	0.62 U	2.0	0.62	ug/l	
124-48-1	Dibromochloromethane	0.61 U	2.0	0.61	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.56 U	2.0	0.56	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.48 U	2.0	0.48	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.45 U	2.0	0.45	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.68 U	2.0	0.68	ug/l	
100-41-4	Ethylbenzene	0.55 U	2.0	0.55	ug/l	
591-78-6	2-Hexanone	3.2 U	10	3.2	ug/l	
108-10-1	4-Methyl-2-pentanone	9.9 U	10	9.9	ug/l	
74-83-9	Methyl bromide	0.94 U	2.0	0.94	ug/l	
74-87-3	Methyl chloride	0.84 U	2.0	0.84	ug/l	
75-09-2	Methylene chloride	0.41 U	5.0	0.41	ug/l	
78-93-3	Methyl ethyl ketone	3.9 U	10	3.9	ug/l	
100-42-5	Styrene	0.56 U	2.0	0.56	ug/l	
71-55-6	1,1,1-Trichloroethane	0.62 U	2.0	0.62	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	1.2 U	2.0	1.2	ug/l	
79-00-5	1,1,2-Trichloroethane	0.98 U	2.0	0.98	ug/l	
127-18-4	Tetrachloroethylene	0.91 U	2.0	0.91	ug/l	
108-88-3	Toluene	0.43 U	2.0	0.43	ug/l	
79-01-6	Trichloroethylene	0.52 U	2.0	0.52	ug/l	

U = Not detected SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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3

Client Sample ID:	SWP-05072010	Date Sampled:	07/05/10
Lab Sample ID:	T55622-1	Date Received:	07/06/10
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	US Oil Recovery/400 North Richey, Pasadena, TX		

VOA TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
75-01-4	Vinyl chloride	1.0 U	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	1.7 U	6.0	1.7	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		79-122%
17060-07-0	1,2-Dichloroethane-D4	102%		75-121%
2037-26-5	Toluene-D8	97%		87-119%
460-00-4	4-Bromofluorobenzene	83%		80-133%

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

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3.1
3**Client Sample ID:** SWP-05072010**Lab Sample ID:** T55622-1**Date Sampled:** 07/05/10**Matrix:** AQ - Surface Water**Date Received:** 07/06/10**Method:** SW846 8270C SW846 3510C**Percent Solids:** n/a**Project:** US Oil Recovery/400 North Richey, Pasadena, TX

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W243.D	1	07/06/10	GJ	07/06/10	OP15289	EW12
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

ABN TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
65-85-0	Benzoic Acid	5.0 U	10	5.0	ug/l	
95-57-8	2-Chlorophenol	1.2 U	5.0	1.2	ug/l	
59-50-7	4-Chloro-3-methyl phenol	1.2 U	5.0	1.2	ug/l	
120-83-2	2,4-Dichlorophenol	2.2 U	5.0	2.2	ug/l	
105-67-9	2,4-Dimethylphenol	1.3 U	5.0	1.3	ug/l	
51-28-5	2,4-Dinitrophenol	15 U	25	15	ug/l	
534-52-1	4,6-Dinitro-o-cresol	1.4 U	10	1.4	ug/l	
95-48-7	2-Methylphenol	0.83 U	5.0	0.83	ug/l	
	3&4-Methylphenol	1.6 U	5.0	1.6	ug/l	
88-75-5	2-Nitrophenol	2.0 U	5.0	2.0	ug/l	
100-02-7	4-Nitrophenol	6.7 U	25	6.7	ug/l	
87-86-5	Pentachlorophenol	13 U	25	13	ug/l	
108-95-2	Phenol	0.75 U	5.0	0.75	ug/l	
95-95-4	2,4,5-Trichlorophenol	1.2 U	5.0	1.2	ug/l	
88-06-2	2,4,6-Trichlorophenol	1.1 U	5.0	1.1	ug/l	
83-32-9	Acenaphthene	1.6 U	5.0	1.6	ug/l	
208-96-8	Acenaphthylene	1.2 U	5.0	1.2	ug/l	
120-12-7	Anthracene	1.1 U	5.0	1.1	ug/l	
56-55-3	Benzo(a)anthracene	1.1 U	5.0	1.1	ug/l	
50-32-8	Benzo(a)pyrene	1.1 U	5.0	1.1	ug/l	
205-99-2	Benzo(b)fluoranthene	0.87 U	5.0	0.87	ug/l	
191-24-2	Benzo(g,h,i)perylene	1.7 U	5.0	1.7	ug/l	
207-08-9	Benzo(k)fluoranthene	1.1 U	5.0	1.1	ug/l	
101-55-3	4-Bromophenyl phenyl ether	1.4 U	5.0	1.4	ug/l	
85-68-7	Butyl benzyl phthalate	1.6 U	5.0	1.6	ug/l	
100-51-6	Benzyl Alcohol	1.3 U	5.0	1.3	ug/l	
91-58-7	2-Chloronaphthalene	1.4 U	5.0	1.4	ug/l	
106-47-8	4-Chloroaniline	4.3 U	5.0	4.3	ug/l	
86-74-8	Carbazole	1.5 U	5.0	1.5	ug/l	
218-01-9	Chrysene	0.98 U	5.0	0.98	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	1.3 U	5.0	1.3	ug/l	
111-44-4	bis(2-Chloroethyl)ether	1.3 U	5.0	1.3	ug/l	

U = Not detected SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SWP-05072010	Date Sampled:	07/05/10
Lab Sample ID:	T55622-1	Date Received:	07/06/10
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	US Oil Recovery/400 North Richey, Pasadena, TX		

ABN TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
108-60-1	bis(2-Chloroisopropyl)ether	2.0 U	5.0	2.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	1.3 U	5.0	1.3	ug/l	
95-50-1	1,2-Dichlorobenzene	1.3 U	5.0	1.3	ug/l	
541-73-1	1,3-Dichlorobenzene	1.3 U	5.0	1.3	ug/l	
106-46-7	1,4-Dichlorobenzene	1.3 U	5.0	1.3	ug/l	
121-14-2	2,4-Dinitrotoluene	1.4 U	5.0	1.4	ug/l	
606-20-2	2,6-Dinitrotoluene	1.3 U	5.0	1.3	ug/l	
91-94-1	3,3'-Dichlorobenzidine	3.2 U	10	3.2	ug/l	
53-70-3	Dibenzo(a,h)anthracene	1.6 U	5.0	1.6	ug/l	
132-64-9	Dibenzofuran	1.3 U	5.0	1.3	ug/l	
84-74-2	Di-n-butyl phthalate	1.1	5.0	1.0	ug/l	J
117-84-0	Di-n-octyl phthalate	1.3 U	5.0	1.3	ug/l	
84-66-2	Diethyl phthalate	1.1 U	5.0	1.1	ug/l	
131-11-3	Dimethyl phthalate	1.1 U	5.0	1.1	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	4.1	5.0	1.8	ug/l	J
206-44-0	Fluoranthene	0.97 U	5.0	0.97	ug/l	
86-73-7	Fluorene	1.3 U	5.0	1.3	ug/l	
118-74-1	Hexachlorobenzene	1.3 U	5.0	1.3	ug/l	
87-68-3	Hexachlorobutadiene	1.1 U	5.0	1.1	ug/l	
77-47-4	Hexachlorocyclopentadiene	5.2 U	10	5.2	ug/l	
67-72-1	Hexachloroethane	0.97 U	5.0	0.97	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	1.8 U	5.0	1.8	ug/l	
78-59-1	Isophorone	1.2 U	5.0	1.2	ug/l	
91-57-6	2-Methylnaphthalene	1.3 U	5.0	1.3	ug/l	
88-74-4	2-Nitroaniline	1.4 U	5.0	1.4	ug/l	
99-09-2	3-Nitroaniline	3.3 U	5.0	3.3	ug/l	
100-01-6	4-Nitroaniline	2.3 U	5.0	2.3	ug/l	
91-20-3	Naphthalene	1.1 U	5.0	1.1	ug/l	
98-95-3	Nitrobenzene	1.7 U	5.0	1.7	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	1.4 U	5.0	1.4	ug/l	
86-30-6	N-Nitrosodiphenylamine	1.7 U	5.0	1.7	ug/l	
85-01-8	Phenanthrene	0.97 U	5.0	0.97	ug/l	
129-00-0	Pyrene	1.7 U	5.0	1.7	ug/l	
120-82-1	1,2,4-Trichlorobenzene	1.3 U	5.0	1.3	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	34%		10-66%
4165-62-2	Phenol-d5	31%		10-53%
118-79-6	2,4,6-Tribromophenol	83%		32-128%

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	SWP-05072010	Date Sampled:	07/05/10
Lab Sample ID:	T55622-1	Date Received:	07/06/10
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	US Oil Recovery/400 North Richey, Pasadena, TX		

ABN TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	55%		29-115%
321-60-8	2-Fluorobiphenyl	56%		34-113%
1718-51-0	Terphenyl-d14	74%		12-145%

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

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3

Client Sample ID: SWP-05072010	Date Sampled: 07/05/10
Lab Sample ID: T55622-1	Date Received: 07/06/10
Matrix: AQ - Surface Water	Percent Solids: n/a
Project: US Oil Recovery/400 North Richey, Pasadena, TX	

Total Metals Analysis

Analyte	Result	MQL	SDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	0.157 B	0.20	0.012	mg/l	1	07/06/10	07/06/10	NS	SW846 6010B ²
Antimony	0.0010 U	0.0050	0.0010	mg/l	1	07/06/10	07/06/10	NS	SW846 6010B ²
Arsenic	0.0123	0.0050	0.0010	mg/l	1	07/06/10	07/06/10	NS	SW846 6010B ²
Barium	0.0509 B	0.20	0.0034	mg/l	1	07/06/10	07/06/10	NS	SW846 6010B ²
Beryllium	0.00016 U	0.0050	0.00016	mg/l	1	07/06/10	07/06/10	NS	SW846 6010B ²
Cadmium	0.000090 U	0.0040	0.000090	mg/l	1	07/06/10	07/06/10	NS	SW846 6010B ²
Calcium	25.5	5.0	0.025	mg/l	1	07/06/10	07/06/10	NS	SW846 6010B ²
Chromium	0.00047 B	0.010	0.00027	mg/l	1	07/06/10	07/06/10	NS	SW846 6010B ²
Cobalt	0.00042 B	0.050	0.00022	mg/l	1	07/06/10	07/06/10	NS	SW846 6010B ²
Copper	0.0059 U	0.025	0.0059	mg/l	1	07/06/10	07/06/10	NS	SW846 6010B ²
Iron	0.0842 B	0.10	0.023	mg/l	1	07/06/10	07/06/10	NS	SW846 6010B ²
Lead	0.0024 B	0.0030	0.0018	mg/l	1	07/06/10	07/06/10	NS	SW846 6010B ²
Magnesium	1.41 B	5.0	0.0079	mg/l	1	07/06/10	07/06/10	NS	SW846 6010B ²
Manganese	0.108	0.015	0.0019	mg/l	1	07/06/10	07/06/10	NS	SW846 6010B ²
Mercury	0.000094 U	0.00020	0.000094	mg/l	1	07/06/10	07/06/10	CN	SW846 7470A ¹
Nickel	0.0428	0.040	0.0014	mg/l	1	07/06/10	07/06/10	NS	SW846 6010B ²
Potassium	4.99 B	5.0	0.045	mg/l	1	07/06/10	07/06/10	NS	SW846 6010B ²
Selenium	0.00098 U	0.0050	0.00098	mg/l	1	07/06/10	07/06/10	NS	SW846 6010B ²
Silver	0.00024 U	0.010	0.00024	mg/l	1	07/06/10	07/06/10	NS	SW846 6010B ²
Sodium	50.2	5.0	0.10	mg/l	1	07/06/10	07/06/10	NS	SW846 6010B ²
Thallium	0.0012 U	0.010	0.0012	mg/l	1	07/06/10	07/06/10	NS	SW846 6010B ²
Vanadium	0.0018 B	0.050	0.00030	mg/l	1	07/06/10	07/06/10	NS	SW846 6010B ²
Zinc	0.0417	0.020	0.0035	mg/l	1	07/06/10	07/06/10	NS	SW846 6010B ²

(1) Instrument QC Batch: MA4885

(2) Instrument QC Batch: MA4886

(3) Prep QC Batch: MP12217

(4) Prep QC Batch: MP12218

MQL = Method Quantitation Limit
 SDL = Sample Detection Limit

U = Indicates a result < SDL
 B = Indicates a result > = SDL but < MQL

Report of Analysis

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3**Client Sample ID:** SWP-05072010-TB**Lab Sample ID:** T55622-2**Date Sampled:** 07/05/10**Matrix:** AQ - Trip Blank Water**Date Received:** 07/06/10**Method:** SW846 8260B**Percent Solids:** n/a**Project:** US Oil Recovery/400 North Richey, Pasadena, TX

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C0010571.D	1	07/06/10	RR	n/a	n/a	VC471
Run #2							

Purge Volume

Run #1 5.0 ml

Run #2

VOA TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
67-64-1	Acetone	4.7 U	50	4.7	ug/l	
71-43-2	Benzene	0.50 U	2.0	0.50	ug/l	
75-27-4	Bromodichloromethane	0.49 U	2.0	0.49	ug/l	
75-25-2	Bromoform	1.4 U	2.0	1.4	ug/l	
108-90-7	Chlorobenzene	0.56 U	2.0	0.56	ug/l	
75-00-3	Chloroethane	0.92 U	2.0	0.92	ug/l	
67-66-3	Chloroform	0.64 U	2.0	0.64	ug/l	
75-15-0	Carbon disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon tetrachloride	0.66 U	2.0	0.66	ug/l	
75-34-3	1,1-Dichloroethane	0.52 U	2.0	0.52	ug/l	
75-35-4	1,1-Dichloroethylene	0.50 U	2.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	0.62 U	2.0	0.62	ug/l	
78-87-5	1,2-Dichloropropane	0.62 U	2.0	0.62	ug/l	
124-48-1	Dibromochloromethane	0.61 U	2.0	0.61	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.56 U	2.0	0.56	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.48 U	2.0	0.48	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.45 U	2.0	0.45	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.68 U	2.0	0.68	ug/l	
100-41-4	Ethylbenzene	0.55 U	2.0	0.55	ug/l	
591-78-6	2-Hexanone	3.2 U	10	3.2	ug/l	
108-10-1	4-Methyl-2-pentanone	9.9 U	10	9.9	ug/l	
74-83-9	Methyl bromide	0.94 U	2.0	0.94	ug/l	
74-87-3	Methyl chloride	0.84 U	2.0	0.84	ug/l	
75-09-2	Methylene chloride	0.41 U	5.0	0.41	ug/l	
78-93-3	Methyl ethyl ketone	3.9 U	10	3.9	ug/l	
100-42-5	Styrene	0.56 U	2.0	0.56	ug/l	
71-55-6	1,1,1-Trichloroethane	0.62 U	2.0	0.62	ug/l	
79-34-5	1,1,1,2-Tetrachloroethane	1.2 U	2.0	1.2	ug/l	
79-00-5	1,1,2-Trichloroethane	0.98 U	2.0	0.98	ug/l	
127-18-4	Tetrachloroethylene	0.91 U	2.0	0.91	ug/l	
108-88-3	Toluene	0.43 U	2.0	0.43	ug/l	
79-01-6	Trichloroethylene	0.52 U	2.0	0.52	ug/l	

U = Not detected SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	SWP-05072010-TB	Date Sampled:	07/05/10
Lab Sample ID:	T55622-2	Date Received:	07/06/10
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	US Oil Recovery/400 North Richey, Pasadena, TX		

VOA TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
75-01-4	Vinyl chloride	1.0 U	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	1.7 U	6.0	1.7	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		79-122%
17060-07-0	1,2-Dichloroethane-D4	101%		75-121%
2037-26-5	Toluene-D8	97%		87-119%
460-00-4	4-Bromofluorobenzene	88%		80-133%

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound



Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

SAMPLE INSPECTION FORM

Accutest Job Number: T55622 Client: Weston Solutions Date/Time Received: 7-6-10 7:13
 # of Coolers Received: 1 Thermometer #: 110 Temperature Adjustment Factor: -1.5°C
 Cooler Temps: #1: 1.0°C #2: _____ #3: _____ #4: _____ #5: _____ #6: _____ #7: _____ #8: _____
 Method of Delivery: FEDEX UPS Accutest Courier Greyhound Delivery Other _____
 Airbill Numbers: _____

COOLER INFORMATION

- ☐ Custody seal missing or not intact
- ☐ Temperature criteria not met
- ☐ Wet ice received in cooler

CHAIN OF CUSTODY

- ☐ Chain of Custody not received
- ☐ Sample D/T unclear or missing
- ☐ Analyses unclear or missing
- ☐ COC not properly executed

SAMPLE INFORMATION

- ☐ Sample containers received broken
- ☐ VOC vials have headspace
- ☐ Sample labels missing or illegible
- ☐ ID on COC does not match label(s)
- ☐ D/T on COC does not match label(s)
- ☐ Sample/Bottles rcvd but no analysis on COC
- ☐ Sample listed on COC, but not received
- ☐ Bottles missing for requested analysis
- ☐ Insufficient volume for analysis
- ☐ Sample received improperly preserved

TRIP BLANK INFORMATION

- ☐ Trip Blank on COC but not received
- ☐ Trip Blank received but not on COC
- ☐ Trip Blank not intact
- ☐ Received Water Trip Blank
- ☐ Received Soil TB

Number of Encores? _____
 Number of 5035 kdt's? _____
 Number of lab-filtered metals? _____

Summary of Discrepancies: _____

TECHNICIAN SIGNATURE/DATE: [Signature] 7-6-10

INFORMATION AND SAMPLE LABELING VERIFIED BY: [Signature]

CORRECTIVE ACTIONS

Client Representative Notified: _____ Date: _____

By Accutest Representative: _____ Via: Phone Email

Client Instructions: _____

I:\mwalker\form\samplemanagement

T55622: Chain of Custody
Page 2 of 3

JOB #: TS5622 DATE/TIME RECEIVED: 7-6-12 743
CLIENT: Weston Solutions INITIALS: SC

PRESERVATIVES: 1: None 2: HCL 3: HN03 4: H2SO4 5: NAOH 6: DI 7: MeOH 8: Other
 LOCATION: 1: Walk-In #1 (Waters) 2: Walk-In #2 (Soils) VR: Volatile Fridge M: Metals SUB: Subcontract EF: Encore Freezer
 Date: 8/13/01

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ACCUTEST
T55622



GC/MS Volatiles

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QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 2

Job Number: T55622

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VC471-MB	C0010565.D	1	07/06/10	RR	n/a	n/a	VC471

The QC reported here applies to the following samples:

Method: SW846 8260B

T55622-1, T55622-2

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	4.7	ug/l	
71-43-2	Benzene	ND	2.0	0.50	ug/l	
75-27-4	Bromodichloromethane	ND	2.0	0.49	ug/l	
75-25-2	Bromoform	ND	2.0	1.4	ug/l	
108-90-7	Chlorobenzene	ND	2.0	0.56	ug/l	
75-00-3	Chloroethane	ND	2.0	0.92	ug/l	
67-66-3	Chloroform	ND	2.0	0.64	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.53	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	0.66	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	0.52	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	0.62	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	0.62	ug/l	
124-48-1	Dibromochloromethane	ND	2.0	0.61	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	2.0	0.56	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	0.48	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	2.0	0.45	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	0.68	ug/l	
100-41-4	Ethylbenzene	ND	2.0	0.55	ug/l	
591-78-6	2-Hexanone	ND	10	3.2	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	9.9	ug/l	
74-83-9	Methyl bromide	ND	2.0	0.94	ug/l	
74-87-3	Methyl chloride	ND	2.0	0.84	ug/l	
75-09-2	Methylene chloride	ND	5.0	0.41	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	3.9	ug/l	
100-42-5	Styrene	ND	2.0	0.56	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	0.62	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	1.2	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	0.98	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	0.91	ug/l	
108-88-3	Toluene	ND	2.0	0.43	ug/l	
79-01-6	Trichloroethylene	ND	2.0	0.52	ug/l	
75-01-4	Vinyl chloride	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	1.7	ug/l	

Method Blank Summary

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Job Number: T55622

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VC471-MB	C0010565.D	1	07/06/10	RR	n/a	n/a	VC471

The QC reported here applies to the following samples:

Method: SW846 8260B

T55622-1, T55622-2

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	103% 79-122%
17060-07-0	1,2-Dichloroethane-D4	103% 75-121%
2037-26-5	Toluene-D8	96% 87-119%
460-00-4	4-Bromofluorobenzene	88% 80-133%

5.1.1

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Blank Spike Summary

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Job Number: T55622

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VC471-BS	C0010563.D	1	07/06/10	RR	n/a	n/a	VC471

The QC reported here applies to the following samples:

Method: SW846 8260B

T55622-1, T55622-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	107	86	62-124
71-43-2	Benzene	25	23.3	93	76-118
75-27-4	Bromodichloromethane	25	22.4	90	68-107
75-25-2	Bromoform	25	22.8	91	64-103
108-90-7	Chlorobenzene	25	22.2	89	74-111
75-00-3	Chloroethane	25	19.9	80	75-135
67-66-3	Chloroform	25	22.6	90	75-117
75-15-0	Carbon disulfide	25	25.0	100	57-126
56-23-5	Carbon tetrachloride	25	23.5	94	75-125
75-34-3	1,1-Dichloroethane	25	23.2	93	76-121
75-35-4	1,1-Dichloroethylene	25	22.0	88	71-128
107-06-2	1,2-Dichloroethane	25	22.3	89	70-111
78-87-5	1,2-Dichloropropane	25	23.3	93	71-113
124-48-1	Dibromochloromethane	25	22.6	90	69-104
156-59-2	cis-1,2-Dichloroethylene	25	23.6	94	68-113
10061-01-5	cis-1,3-Dichloropropene	25	22.4	90	71-111
156-60-5	trans-1,2-Dichloroethylene	25	20.6	82	70-125
10061-02-6	trans-1,3-Dichloropropene	25	23.4	94	75-111
100-41-4	Ethylbenzene	25	21.5	86	75-112
591-78-6	2-Hexanone	125	117	94	60-113
108-10-1	4-Methyl-2-pentanone	125	123	98	63-115
74-83-9	Methyl bromide	25	17.4	70	59-132
74-87-3	Methyl chloride	25	21.8	87	56-150
75-09-2	Methylene chloride	25	22.1	88	70-113
78-93-3	Methyl ethyl ketone	125	113	90	62-117
100-42-5	Styrene	25	19.6	78	66-100
71-55-6	1,1,1-Trichloroethane	25	22.8	91	76-125
79-34-5	1,1,2,2-Tetrachloroethane	25	23.3	93	67-110
79-00-5	1,1,2-Trichloroethane	25	22.6	90	69-107
127-18-4	Tetrachloroethylene	25	23.7	95	77-120
108-88-3	Toluene	25	22.8	91	77-114
79-01-6	Trichloroethylene	25	23.5	94	74-117
75-01-4	Vinyl chloride	25	19.7	79	64-121
1330-20-7	Xylene (total)	75	65.4	87	75-111

Blank Spike Summary

Job Number: T55622
Account: RFWTXHO Weston Solutions
Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VC471-BS	C0010563.D	1	07/06/10	RR	n/a	n/a	VC471

The QC reported here applies to the following samples: Method: SW846 8260B

T55622-1, T55622-2

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	100%	79-122%
17060-07-0	1,2-Dichloroethane-D4	98%	75-121%
2037-26-5	Toluene-D8	99%	87-119%
460-00-4	4-Bromofluorobenzene	87%	80-133%

Matrix Spike/Matrix Spike Duplicate Summary

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Job Number: T55622

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T55607-3MS	C0010573.D	1	07/06/10	RR	n/a	n/a	VC471
T55607-3MSD	C0010574.D	1	07/06/10	RR	n/a	n/a	VC471
T55607-3	C0010572.D	1	07/06/10	RR	n/a	n/a	VC471

The QC reported here applies to the following samples:

Method: SW846 8260B

T55622-1, T55622-2

CAS No.	Compound	T55607-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	50 U		125	117	94	115	92	2	62-124/21
71-43-2	Benzene	2.0 U		25	23.2	93	21.8	87	6	76-118/16
75-27-4	Bromodichloromethane	2.0 U		25	22.5	90	22.1	88	2	68-107/12
75-25-2	Bromoform	2.0 U		25	24.1	96	23.6	94	2	64-103/14
108-90-7	Chlorobenzene	2.0 U		25	21.4	86	20.9	84	2	74-111/11
75-00-3	Chloroethane	2.0 U		25	20.5	82	18.1	72*	12	75-135/15
67-66-3	Chloroform	2.0 U		25	22.4	90	22.3	89	0	75-117/12
75-15-0	Carbon disulfide	2.0 U		25	24.6	98	22.5	90	9	57-126/13
56-23-5	Carbon tetrachloride	2.0 U		25	22.8	91	20.7	83	10	75-125/12
75-34-3	1,1-Dichloroethane	2.0 U		25	23.7	95	22.1	88	7	76-121/13
75-35-4	1,1-Dichloroethylene	2.0 U		25	21.2	85	19.3	77	9	71-128/19
107-06-2	1,2-Dichloroethane	2.0 U		25	22.4	90	22.3	89	0	70-111/14
78-87-5	1,2-Dichloropropane	2.0 U		25	23.2	93	22.2	89	4	71-113/12
124-48-1	Dibromochloromethane	2.0 U		25	22.6	90	22.5	90	0	69-104/12
156-59-2	cis-1,2-Dichloroethylene	2.0 U		25	23.0	92	22.2	89	4	68-113/13
10061-01-5	cis-1,3-Dichloropropene	2.0 U		25	20.7	83	20.6	82	0	71-111/12
156-60-5	trans-1,2-Dichloroethylene	2.0 U		25	20.0	80	18.9	76	6	70-125/14
10061-02-6	trans-1,3-Dichloropropene	2.0 U		25	22.7	91	22.5	90	1	75-111/12
100-41-4	Ethylbenzene	2.0 U		25	20.3	81	19.2	77	6	75-112/12
591-78-6	2-Hexanone	10 U		125	166	133*	170	136*	2	60-113/18
108-10-1	4-Methyl-2-pentanone	10 U		125	164	131*	164	131*	0	63-115/21
74-83-9	Methyl bromide	2.0 U		25	17.3	69	17.0	68	2	59-132/15
74-87-3	Methyl chloride	2.0 U		25	22.4	90	21.6	86	4	56-150/17
75-09-2	Methylene chloride	5.0 U		25	21.2	85	20.7	83	2	70-113/13
78-93-3	Methyl ethyl ketone	10 U		125	129	103	126	101	2	62-117/21
100-42-5	Styrene	2.0 U		25	18.8	75	18.2	73	3	66-100/11
71-55-6	1,1,1-Trichloroethane	2.0 U		25	22.3	89	20.3	81	9	76-125/11
79-34-5	1,1,2,2-Tetrachloroethane	2.0 U		25	27.3	109	26.2	105	4	67-110/20
79-00-5	1,1,2-Trichloroethane	2.0 U		25	23.6	94	23.2	93	2	69-107/14
127-18-4	Tetrachloroethylene	2.0 U		25	22.1	88	20.1	80	9	77-120/13
108-88-3	Toluene	2.0 U		25	21.9	88	21.3	85	3	77-114/12
79-01-6	Trichloroethylene	2.0 U		25	22.5	90	21.6	86	4	74-117/12
75-01-4	Vinyl chloride	2.0 U		25	18.8	75	17.1	68	9	64-121/19
1330-20-7	Xylene (total)	6.0 U		75	60.5	81	57.2	76	6	75-111/12

Matrix Spike/Matrix Spike Duplicate Summary

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Job Number: T55622

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T55607-3MS	C0010573.D	1	07/06/10	RR	n/a	n/a	VC471
T55607-3MSD	C0010574.D	1	07/06/10	RR	n/a	n/a	VC471
T55607-3	C0010572.D	1	07/06/10	RR	n/a	n/a	VC471

The QC reported here applies to the following samples:

Method: SW846 8260B

T55622-1, T55622-2

CAS No.	Surrogate Recoveries	MS	MSD	T55607-3	Limits
1868-53-7	Dibromofluoromethane	101%	99%	103%	79-122%
17060-07-0	1,2-Dichloroethane-D4	98%	98%	103%	75-121%
2037-26-5	Toluene-D8	97%	97%	95%	87-119%
460-00-4	4-Bromofluorobenzene	87%	88%	88%	80-133%

5.3.1

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GC/MS Semi-volatiles



QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

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Job Number: T55622

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP15289-MB	P11870.D	1	07/06/10	GJ	07/06/10	OP15289	EP559

The QC reported here applies to the following samples:

Method: SW846 8270C

T55622-1

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	10	5.0	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	1.2	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.0	1.2	ug/l	
120-83-2	2,4-Dichlorophenol	ND	5.0	2.2	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.0	1.3	ug/l	
51-28-5	2,4-Dinitrophenol	ND	25	15	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	1.4	ug/l	
95-48-7	2-Methylphenol	ND	5.0	0.83	ug/l	
	3&4-Methylphenol	ND	5.0	1.6	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	2.0	ug/l	
100-02-7	4-Nitrophenol	ND	25	6.7	ug/l	
87-86-5	Pentachlorophenol	ND	25	13	ug/l	
108-95-2	Phenol	ND	5.0	0.75	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.0	1.2	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	1.1	ug/l	
83-32-9	Acenaphthene	ND	5.0	1.6	ug/l	
208-96-8	Acenaphthylene	ND	5.0	1.2	ug/l	
120-12-7	Anthracene	ND	5.0	1.1	ug/l	
56-55-3	Benzo(a)anthracene	ND	5.0	1.1	ug/l	
50-32-8	Benzo(a)pyrene	ND	5.0	1.1	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	5.0	0.87	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	5.0	1.7	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	5.0	1.1	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	1.4	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	1.6	ug/l	
100-51-6	Benzyl Alcohol	ND	5.0	1.3	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	1.4	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	4.3	ug/l	
86-74-8	Carbazole	ND	5.0	1.5	ug/l	
218-01-9	Chrysene	ND	5.0	0.98	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	1.3	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	1.3	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	2.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	1.3	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	5.0	1.3	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	5.0	1.3	ug/l	

Method Blank Summary

Page 2 of 3

Job Number: T55622

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP15289-MB	P11870.D	1	07/06/10	GJ	07/06/10	OP15289	EP559

The QC reported here applies to the following samples:

Method: SW846 8270C

T55622-1

CAS No.	Compound	Result	RL	MDL	Units	Q
106-46-7	1,4-Dichlorobenzene	ND	5.0	1.3	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	5.0	1.4	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	5.0	1.3	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	10	3.2	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	5.0	1.6	ug/l	
132-64-9	Dibenzofuran	ND	5.0	1.3	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.0	1.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	1.3	ug/l	
84-66-2	Diethyl phthalate	ND	5.0	1.1	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	1.1	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	5.0	1.8	ug/l	
206-44-0	Fluoranthene	ND	5.0	0.97	ug/l	
86-73-7	Fluorene	ND	5.0	1.3	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	1.3	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	1.1	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	5.2	ug/l	
67-72-1	Hexachloroethane	ND	5.0	0.97	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	5.0	1.8	ug/l	
78-59-1	Isophorone	ND	5.0	1.2	ug/l	
91-57-6	2-Methylnaphthalene	ND	5.0	1.3	ug/l	
88-74-4	2-Nitroaniline	ND	5.0	1.4	ug/l	
99-09-2	3-Nitroaniline	ND	5.0	3.3	ug/l	
100-01-6	4-Nitroaniline	ND	5.0	2.3	ug/l	
91-20-3	Naphthalene	ND	5.0	1.1	ug/l	
98-95-3	Nitrobenzene	ND	5.0	1.7	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	1.4	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	1.7	ug/l	
85-01-8	Phenanthrene	ND	5.0	0.97	ug/l	
129-00-0	Pyrene	ND	5.0	1.7	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	1.3	ug/l	

CAS No.	Surrogate Recoveries	Limits
367-12-4	2-Fluorophenol	23% 10-66%
4165-62-2	Phenol-d5	46% 10-53%

Method Blank Summary

Job Number: T55622
Account: RFWTXHO Weston Solutions
Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP15289-MB	P11870.D	1	07/06/10	GJ	07/06/10	OP15289	EP559

The QC reported here applies to the following samples: Method: SW846 8270C

T55622-1

CAS No.	Surrogate Recoveries	Limits
118-79-6	2,4,6-Tribromophenol	75% 32-128%
4165-60-0	Nitrobenzene-d5	85% 29-115%
321-60-8	2-Fluorobiphenyl	83% 34-113%
1718-51-0	Terphenyl-d14	80% 12-145%

Blank Spike Summary

Page 1 of 3

Job Number: T55622

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP15289-BS	P11869.D	1	07/06/10	GJ	07/06/10	OP15289	EP559

The QC reported here applies to the following samples:

Method: SW846 8270C

T55622-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
65-85-0	Benzoic Acid	50	24.5	49	10-68
95-57-8	2-Chlorophenol	50	33.7	67	39-93
59-50-7	4-Chloro-3-methyl phenol	50	35.8	72	43-109
120-83-2	2,4-Dichlorophenol	50	35.1	70	42-106
105-67-9	2,4-Dimethylphenol	50	34.3	69	27-87
51-28-5	2,4-Dinitrophenol	50	37.4	75	43-107
534-52-1	4,6-Dinitro-o-cresol	50	38.5	77	47-112
95-48-7	2-Methylphenol	50	29.0	58	25-84
	3&4-Methylphenol	100	52.6	53	25-77
88-75-5	2-Nitrophenol	50	34.9	70	38-96
100-02-7	4-Nitrophenol	50	16.3	33	13-70
87-86-5	Pentachlorophenol	50	29.4	59	46-153
108-95-2	Phenol	50	17.5	35	10-53
95-95-4	2,4,5-Trichlorophenol	50	38.7	77	40-101
88-06-2	2,4,6-Trichlorophenol	50	36.8	74	41-102
83-32-9	Acenaphthene	50	30.4	61	41-110
208-96-8	Acenaphthylene	50	32.1	64	49-113
120-12-7	Anthracene	50	43.9	88	59-105
56-55-3	Benzo(a)anthracene	50	45.5	91	64-112
50-32-8	Benzo(a)pyrene	50	42.1	84	62-116
205-99-2	Benzo(b)fluoranthene	50	47.5	95	62-114
191-24-2	Benzo(g,h,i)perylene	50	40.4	81	55-124
207-08-9	Benzo(k)fluoranthene	50	50.9	102	62-119
101-55-3	4-Bromophenyl phenyl ether	50	38.1	76	56-99
85-68-7	Butyl benzyl phthalate	50	44.1	88	52-125
100-51-6	Benzyl Alcohol	50	27.9	56	28-83
91-58-7	2-Chloronaphthalene	50	28.8	58	42-97
106-47-8	4-Chloroaniline	50	42.9	86	37-128
86-74-8	Carbazole	50	45.5	91	59-142
218-01-9	Chrysene	50	45.9	92	67-112
111-91-1	bis(2-Chloroethoxy)methane	50	34.3	69	38-96
111-44-4	bis(2-Chloroethyl)ether	50	38.3	77	37-91
108-60-1	bis(2-Chloroisopropyl)ether	50	30.8	62	36-102
7005-72-3	4-Chlorophenyl phenyl ether	50	38.3	77	48-101
95-50-1	1,2-Dichlorobenzene	50	27.2	54	33-86
541-73-1	1,3-Dichlorobenzene	50	23.4	47	21-88

Blank Spike Summary

Page 2 of 3

Job Number: T55622

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP15289-BS	P11869.D	1	07/06/10	GJ	07/06/10	OP15289	EP559

The QC reported here applies to the following samples:

Method: SW846 8270C

T55622-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
106-46-7	1,4-Dichlorobenzene	50	27.2	54	31-86
121-14-2	2,4-Dinitrotoluene	50	48.1	96	55-112
606-20-2	2,6-Dinitrotoluene	50	40.7	81	57-105
91-94-1	3,3'-Dichlorobenzidine	50	34.8	70	50-142
53-70-3	Dibenzo(a,h)anthracene	50	46.1	92	55-123
132-64-9	Dibenzofuran	50	36.2	72	45-99
84-74-2	Di-n-butyl phthalate	50	46.4	93	64-114
117-84-0	Di-n-octyl phthalate	50	50.6	101	55-118
84-66-2	Diethyl phthalate	50	44.4	89	52-113
131-11-3	Dimethyl phthalate	50	41.9	84	38-112
117-81-7	bis(2-Ethylhexyl)phthalate	50	46.8	94	56-131
206-44-0	Fluoranthene	50	50.8	102	62-116
86-73-7	Fluorene	50	37.7	75	47-99
118-74-1	Hexachlorobenzene	50	43.4	87	62-102
87-68-3	Hexachlorobutadiene	50	28.9	58	37-91
77-47-4	Hexachlorocyclopentadiene	50	30.1	60	23-102
67-72-1	Hexachloroethane	50	29.5	59	33-86
193-39-5	Indeno(1,2,3-cd)pyrene	50	44.0	88	52-126
78-59-1	Isophorone	50	35.5	71	42-105
91-57-6	2-Methylnaphthalene	50	37.5	75	36-91
88-74-4	2-Nitroaniline	50	41.6	83	49-109
99-09-2	3-Nitroaniline	50	45.2	90	46-139
100-01-6	4-Nitroaniline	50	46.6	93	73-174
91-20-3	Naphthalene	50	30.5	61	37-89
98-95-3	Nitrobenzene	50	48.0	96	42-97
621-64-7	N-Nitroso-di-n-propylamine	50	40.2	80	42-102
86-30-6	N-Nitrosodiphenylamine	50	34.4	69	64-119
85-01-8	Phenanthrene	50	42.2	84	59-103
129-00-0	Pyrene	50	41.7	83	58-110
120-82-1	1,2,4-Trichlorobenzene	50	26.3	53	37-88

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	45%	10-66%
4165-62-2	Phenol-d5	38%	10-53%

Blank Spike Summary

Job Number: T55622
Account: RFWTXHO Weston Solutions
Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP15289-BS	P11869.D	1	07/06/10	GJ	07/06/10	OP15289	EP559

The QC reported here applies to the following samples: Method: SW846 8270C

T55622-1

CAS No.	Surrogate Recoveries	BSP	Limits
118-79-6	2,4,6-Tribromophenol	83%	32-128%
4165-60-0	Nitrobenzene-d5	73%	29-115%
321-60-8	2-Fluorobiphenyl	70%	34-113%
1718-51-0	Terphenyl-d14	91%	12-145%

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 3

Job Number: T55622

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP15289-MS	P11874.D	1	07/06/10	GJ	07/06/10	OP15289	EP559
OP15289-MSD	P11875.D	1	07/06/10	GJ	07/06/10	OP15289	EP559
T55607-3	P11873.D	1	07/06/10	GJ	07/06/10	OP15289	EP559

The QC reported here applies to the following samples:

Method: SW846 8270C

T55622-1

CAS No.	Compound	T55607-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic Acid	10 U		50	26.4	53	15.7	31	51*	10-68/27
95-57-8	2-Chlorophenol	5.0 U		50	35.4	71	27.9	56	24	39-93/28
59-50-7	4-Chloro-3-methyl phenol	5.0 U		50	37.7	75	33.4	67	12	43-109/28
120-83-2	2,4-Dichlorophenol	5.0 U		50	37.0	74	30.5	61	19	42-106/25
105-67-9	2,4-Dimethylphenol	5.0 U		50	33.7	67	27.8	56	19	27-87/26
51-28-5	2,4-Dinitrophenol	25 U		50	31.3	63	14	27*	79*	43-107/44
534-52-1	4,6-Dinitro-o-cresol	10 U		50	36.6	73	22.0	44*	50*	47-112/24
95-48-7	2-Methylphenol	5.0 U		50	30.7	61	25.0	50	20	25-84/31
	3&4-Methylphenol	5.0 U		100	55.9	56	46.7	47	18	25-77/25
88-75-5	2-Nitrophenol	5.0 U		50	37.4	75	30.4	61	21	38-96/26
100-02-7	4-Nitrophenol	25 U		50	21.6	43	21.9	44	1	13-70/25
87-86-5	Pentachlorophenol	25 U		50	37.2	74	32.8	66	13	46-153/18
108-95-2	Phenol	5.0 U		50	19.7	39	16.0	32	21	10-53/35
95-95-4	2,4,5-Trichlorophenol	5.0 U		50	41.9	84	35.6	71	16	40-101/22
88-06-2	2,4,6-Trichlorophenol	5.0 U		50	39.4	79	33.2	66	17	41-102/22
83-32-9	Acenaphthene	5.0 U		50	36.4	73	30.8	62	17	41-110/21
208-96-8	Acenaphthylene	5.0 U		50	37.0	74	31.1	62	17	49-113/23
120-12-7	Anthracene	5.0 U		50	42.5	85	41.0	82	4	59-105/18
56-55-3	Benzo(a)anthracene	5.0 U		50	44.0	88	44.3	89	1	64-112/20
50-32-8	Benzo(a)pyrene	5.0 U		50	39.0	78	40.4	81	4	62-116/23
205-99-2	Benzo(b)fluoranthene	5.0 U		50	46.3	93	47.3	95	2	62-114/22
191-24-2	Benzo(g,h,i)perylene	5.0 U		50	37.0	74	39.9	80	8	55-124/36
207-08-9	Benzo(k)fluoranthene	5.0 U		50	49.5	99	47.5	95	4	62-119/30
101-55-3	4-Bromophenyl phenyl ether	5.0 U		50	38.7	77	35.7	71	8	56-99/20
85-68-7	Butyl benzyl phthalate	5.0 U		50	43.4	87	42.7	85	2	52-125/25
100-51-6	Benzyl Alcohol	5.0 U		50	32.4	65	26.5	53	20	28-83/32
91-58-7	2-Chloronaphthalene	5.0 U		50	35.7	71	29.0	58	21	42-97/27
106-47-8	4-Chloroaniline	5.0 U		50	34.7	69	29.4	59	17	37-128/29
86-74-8	Carbazole	5.0 U		50	44.7	89	44.6	89	0	59-142/19
218-01-9	Chrysene	5.0 U		50	45.4	91	45.0	90	1	67-112/19
111-91-1	bis(2-Chloroethoxy)methane	5.0 U		50	35.8	72	29.5	59	19	38-96/30
111-44-4	bis(2-Chloroethyl)ether	5.0 U		50	39.8	80	31.0	62	25	37-91/33
108-60-1	bis(2-Chloroisopropyl)ether	5.0 U		50	34.0	68	26.8	54	24	36-102/32
7005-72-3	4-Chlorophenyl phenyl ether	5.0 U		50	41.4	83	36.9	74	11	48-101/21
95-50-1	1,2-Dichlorobenzene	5.0 U		50	33.0	66	25.8	52	24	33-86/29
541-73-1	1,3-Dichlorobenzene	5.0 U		50	29.0	58	23.0	46	23	32-88/32

Matrix Spike/Matrix Spike Duplicate Summary

Page 2 of 3

Job Number: T55622

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP15289-MS	P11874.D	1	07/06/10	GJ	07/06/10	OP15289	EP559
OP15289-MSD	P11875.D	1	07/06/10	GJ	07/06/10	OP15289	EP559
T55607-3	P11873.D	1	07/06/10	GJ	07/06/10	OP15289	EP559

The QC reported here applies to the following samples:

Method: SW846 8270C

T55622-1

CAS No.	Compound	T55607-3 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
106-46-7	1,4-Dichlorobenzene	5.0 U	50	31.7	63	25.1	50	23	31-86/36
121-14-2	2,4-Dinitrotoluene	5.0 U	50	47.3	95	46.2	92	2	55-112/23
606-20-2	2,6-Dinitrotoluene	5.0 U	50	40.3	81	37.2	74	8	57-105/23
91-94-1	3,3'-Dichlorobenzidine	10 U	50	8.8	18*	8.2	16*	7	50-142/21
53-70-3	Dibenzo(a,h)anthracene	5.0 U	50	42.7	85	45.3	91	6	55-123/37
132-64-9	Dibenzofuran	5.0 U	50	40.0	80	34.8	70	14	45-99/20
84-74-2	Di-n-butyl phthalate	5.0 U	50	45.9	92	45.3	91	1	64-114/16
117-84-0	Di-n-octyl phthalate	5.0 U	50	49.6	99	47.9	96	3	55-118/25
84-66-2	Diethyl phthalate	5.0 U	50	43.2	86	41.8	84	3	52-113/20
131-11-3	Dimethyl phthalate	5.0 U	50	41.8	84	38.0	76	10	38-112/19
117-81-7	bis(2-Ethylhexyl)phthalate	5.0 U	50	46.9	94	45.6	91	3	56-131/19
206-44-0	Fluoranthene	5.0 U	50	49.7	99	49.5	99	0	62-116/24
86-73-7	Fluorene	5.0 U	50	40.4	81	36.0	72	12	47-99/22
118-74-1	Hexachlorobenzene	5.0 U	50	43.0	86	41.2	82	4	62-102/21
87-68-3	Hexachlorobutadiene	5.0 U	50	34.9	70	28.0	56	22	37-91/28
77-47-4	Hexachlorocyclopentadiene	10 U	50	36.8	74	28.8	58	24	23-102/34
67-72-1	Hexachloroethane	5.0 U	50	37.6	75	27.9	56	30	33-86/30
193-39-5	Indeno(1,2,3-cd)pyrene	5.0 U	50	41.3	83	44.4	89	7	52-126/30
78-59-1	Isophorone	5.0 U	50	37.0	74	31.0	62	18	42-105/28
91-57-6	2-Methylnaphthalene	5.0 U	50	43.5	87	37.4	75	15	36-91/29
88-74-4	2-Nitroaniline	5.0 U	50	40.5	81	35.7	71	13	49-109/22
99-09-2	3-Nitroaniline	5.0 U	50	25.1	50	24.2	48	4	46-139/23
100-01-6	4-Nitroaniline	5.0 U	50	27.2	54*	25.9	52*	5	73-174/24
91-20-3	Naphthalene	5.0 U	50	36.6	73	29.4	59	22	37-89/24
98-95-3	Nitrobenzene	5.0 U	50	55.4	111*	45.7	91	19	42-97/26
621-64-7	N-Nitroso-di-n-propylamine	5.0 U	50	42.6	85	34.6	69	21	42-102/27
86-30-6	N-Nitrosodiphenylamine	5.0 U	50	33.2	66	31.8	64	4	64-119/27
85-01-8	Phenanthrene	5.0 U	50	41.9	84	40.2	80	4	59-103/19
129-00-0	Pyrene	5.0 U	50	39.9	80	39.6	79	1	58-110/25
120-82-1	1,2,4-Trichlorobenzene	5.0 U	50	31.4	63	25.7	51	20	37-88/23

CAS No.	Surrogate Recoveries	MS	MSD	T55607-3	Limits
367-12-4	2-Fluorophenol	47%	37%	54%	10-66%
4165-62-2	Phenol-d5	40%	33%	49%	10-53%

Matrix Spike/Matrix Spike Duplicate Summary

Page 3 of 3

Job Number: T55622

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP15289-MS	P11874.D	1	07/06/10	GJ	07/06/10	OP15289	EP559
OP15289-MSD	P11875.D	1	07/06/10	GJ	07/06/10	OP15289	EP559
T55607-3	P11873.D	1	07/06/10	GJ	07/06/10	OP15289	EP559

The QC reported here applies to the following samples:

Method: SW846 8270C

T55622-1

CAS No.	Surrogate Recoveries	MS	MSD	T55607-3	Limits
118-79-6	2,4,6-Tribromophenol	79%	74%	82%	32-128%
4165-60-0	Nitrobenzene-d5	70%	56%	86%	29-115%
321-60-8	2-Fluorobiphenyl	72%	59%	84%	34-113%
1718-51-0	Terphenyl-d14	84%	83%	79%	12-145%

6.3.1

6



Metals Analysis

QC Data Summaries

7

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: T55622
Account: RFWTXHO - Weston Solutions
Project: US Oil Recovery/400 North Richey, Pasadena, TX

QC Batch ID: MP12217
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date: 07/06/10

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	8.3	12	8.6	<200
Antimony	5.0	1	1	-0.10	<5.0
Arsenic	5.0	1.7	1	-0.40	<5.0
Barium	200	.97	3.4	0.21	<200
Beryllium	5.0	.056	.16	0.020	<5.0
Boron	100	1.4	7.8		
Cadmium	4.0	.11	.09	0.060	<4.0
Calcium	5000	7.4	25	13.3	<5000
Chromium	10	.23	.27	-0.11	<10
Cobalt	50	.15	.22	0.11	<50
Copper	25	1.1	5.9	0.18	<25
Iron	100	1.1	23	1.3	<100
Lead	3.0	1	1.8	0.46	<3.0
Lithium	300	2	2		
Magnesium	5000	7.7	7.9	6.1	<5000
Manganese	15	.054	1.9	1.1	<15
Molybdenum	10	.39	.2		
Nickel	40	.69	1.4	0.060	<40
Potassium	5000	39	45	36.7	<5000
Selenium	5.0	1.5	.98	0.76	<5.0
Silver	10	1.2	.24	0.21	<10
Sodium	5000	9.2	100	65.6	<5000
Strontium	10	.061	.4		
Thallium	10	.67	1.2	0.26	<10
Tin	20	.69	2.8		
Titanium	20	.29	.3		
Vanadium	50	.3	.3	-0.010	<50
Zinc	20	.51	3.5	1.5	<20

Associated samples MP12217: T55622-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: T55622
 Account: RFWTXHO - Weston Solutions
 Project: US Oil Recovery/400 North Richey, Pasadena, TX

QC Batch ID: MP12217
 Matrix Type: AQUEOUS

Methods: SW846 6010B
 Units: ug/l

Prep Date:

07/06/10

07/06/10

Metal	T55607-3 Original	DUP	RPD	QC Limits	T55607-3 Original	MS	Spikelot MPTW4	% Rec	QC Limits
Aluminum	6540	7670	15.9	0-20	6540	63400	50000	113.7	80-120
Antimony	0.0	0.0	NC	0-20	0.0	431	400	107.8	80-120
Arsenic	3.8	4.8	23.3 (a)	0-20	3.8	467	400	115.8	80-120
Barium	76.8	85.5	10.7	0-20	76.8	514	400	109.3	80-120
Beryllium	0.13	0.070	60.0 (a)	0-20	0.13	437	400	109.2	80-120
Boron									
Cadmium	0.24	0.0	200.0 (a)	0-20	0.24	471	400	117.7	80-120
Calcium	204000	218000	6.6	0-20	204000	264000	50000	120.0	80-120
Chromium	7.4	7.4	8.5	0-20	7.4	425	400	104.6	80-120
Cobalt	2.3	2.6	12.2	0-20	2.3	373	400	92.7	80-120
Copper	6.0	6.3	4.9	0-20	6.0	450	400	111.0	80-120
Iron	5010	5470	8.8	0-20	5010	54800	50000	99.6	80-120
Lead	16.4	19.0	14.7	0-20	16.4	430	400	103.4	80-120
Lithium									
Magnesium	636000	674000	5.8	0-20	636000	720000	50000	168.0 (b)	80-120
Manganese	203	218	7.1	0-20	203	631	400	107.0	80-120
Molybdenum									
Nickel	0.0	1.4	200.0 (a)	0-20	0.0	422	400	105.5	80-120
Potassium	219000	236000	7.5	0-20	219000	293000	50000	148.0 (b)	80-120
Selenium	5.7	3.3	53.3 (a)	0-20	5.7	472	400	116.6	80-120
Silver	0.0	0.0	NC	0-20	0.0	500	400	125.0N (c)	80-120
Sodium	5180000	5520000	6.4	0-20	5180000	5570000	50000	780.0 (b)	80-120
Strontium									
Thallium	0.0	0.0	NC	0-20	0.0	381	400	95.3	80-120
Tin									
Titanium									
Vanadium	14.8	17.0	13.8	0-20	14.8	423	400	102.1	80-120
Zinc	0.67	0.0	200.0 (a)	0-20	0.67	486	400	121.3N (c)	80-120

Associated samples MP12217: T55622-1

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

(a) RPD acceptable due to low duplicate and sample concentrations.

(b) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

(c) Spike recovery indicates possible matrix interference.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: T55622
 Account: RFWTXHO - Weston Solutions
 Project: US Oil Recovery/400 North Richey, Pasadena, TX

QC Batch ID: MP12217
 Matrix Type: AQUEOUS

Methods: SW846 6010B
 Units: ug/l

Prep Date: 07/06/10

Metal	T55607-3 Original MSD		SpikeLot MPTW4	% Rec	MSD RPD	QC Limit
Aluminum	6540	61100	50000	109.1	3.7	20
Antimony	0.0	417	400	104.3	3.3	20
Arsenic	3.8	452	400	112.1	3.3	20
Barium	76.8	497	400	105.1	3.4	20
Beryllium	0.13	428	400	107.0	2.1	20
Boron						
Cadmium	0.24	458	400	114.4	2.8	20
Calcium	204000	251000	50000	94.0	5.0	20
Chromium	7.4	429	400	105.6	0.9	20
Cobalt	2.3	364	400	90.4	2.4	20
Copper	6.0	439	400	108.3	2.5	20
Iron	5010	53300	50000	96.6	2.8	20
Lead	16.4	426	400	102.4	0.9	20
Lithium						
Magnesium	636000	708000	50000	144.0 (a)	1.7	20
Manganese	203	613	400	102.5	2.9	20
Molybdenum						
Nickel	0.0	420	400	105.0	0.5	20
Potassium	219000	278000	50000	118.0	5.3	20
Selenium	5.7	459	400	113.3	2.8	20
Silver	0.0	486	400	121.5N (b)	2.8	20
Sodium	5180000	5450000	50000	540.0 (a)	2.2	20
Strontium						
Thallium	0.0	382	400	95.5	0.3	20
Tin						
Titanium						
Vanadium	14.8	414	400	99.8	2.2	20
Zinc	0.67	474	400	118.3	2.5	20

Associated samples MP12217: T55622-1

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

(b) Spike recovery indicates possible matrix interference.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: T55622

Account: RFWTXHO - Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

QC Batch ID: MP12217

Methods: SW846 6010B

Matrix Type: AQUEOUS

Units: ug/l

Prep Date:

07/06/10

Metal	BSP Result	Spikelot MPTW4	% Rec	QC Limits
Aluminum	53600	50000	107.2	80-120
Antimony	409	400	102.3	80-120
Arsenic	409	400	102.3	80-120
Barium	426	400	106.5	80-120
Beryllium	431	400	107.8	80-120
Boron				
Cadmium	417	400	104.3	80-120
Calcium	51700	50000	103.4	80-120
Chromium	419	400	104.8	80-120
Cobalt	411	400	102.8	80-120
Copper	421	400	105.3	80-120
Iron	51600	50000	103.2	80-120
Lead	406	400	101.5	80-120
Lithium				
Magnesium	52100	50000	104.2	80-120
Manganese	426	400	106.5	80-120
Molybdenum				
Nickel	404	400	101.0	80-120
Potassium	50800	50000	101.6	80-120
Selenium	419	400	104.8	80-120
Silver	403	400	100.8	80-120
Sodium	51300	50000	102.6	80-120
Strontium				
Thallium	406	400	101.5	80-120
Tin				
Titanium				
Vanadium	412	400	103.0	80-120
Zinc	427	400	106.8	80-120

Associated samples MP12217: T55622-1

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(anr) Analyte not requested

7.1.3

7

Login Number: T55622
Account: RFWTXHO - Weston Solutions
Project: US Oil Recovery/400 North Richey, Pasadena, TX

QC Batch ID: MP12217
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date: 07/06/10

Metal	T55607-3 Original	SDL 1:5	%DIF	QC Limits
Aluminum	6540	6910	5.6	0-10
Antimony	0.00	0.00	NC	0-10
Arsenic	3.79	0.00	100.0 (a)	0-10
Barium	76.8	81.0	5.5	0-10
Beryllium	0.130	0.300	130.8 (a)	0-10
Boron				
Cadmium	0.240	0.00	100.0 (a)	0-10
Calcium	204000	215000	5.5	0-10
Chromium	7.43	7.04	3.4	0-10
Cobalt	2.26	2.49	10.2 (a)	0-10
Copper	5.98	11.3	89.3 (a)	0-10
Iron	5010	5300	5.9	0-10
Lead	16.4	15.5	5.0	0-10
Lithium				
Magnesium	636000	646000	1.6	0-10
Manganese	203	213	5.1	0-10
Molybdenum				
Nickel	0.00	0.00	NC	0-10
Potassium	219000	214000	2.1	0-10
Selenium	5.73	0.00	100.0 (a)	0-10
Silver	0.00	0.00	NC	0-10
Sodium	5180000	5470000	5.5	0-10
Strontium				
Thallium	0.00	0.00	NC	0-10
Tin				
Titanium				
Vanadium	14.8	14.9	1.0	0-10
Zinc	0.670	7.41	1006.0 (a)	0-10

Associated samples MP12217: T55622-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: T55622
Account: RFWTXHO - Weston Solutions
Project: US Oil Recovery/400 North Richey, Pasadena, TX

QC Batch ID: MP12218
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 07/06/10

Metal	RL	IDL	MDL	MB	
				raw	final
Mercury	0.20	.049	.094	0.045	<0.20

Associated samples MP12218: T55622-1

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(anr) Analyte not requested

7.2.1

7

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: T55622
 Account: RFWTXHO - Weston Solutions
 Project: US Oil Recovery/400 North Richey, Pasadena, TX

QC Batch ID: MP12218
 Matrix Type: AQUEOUS
 Methods: SW846 7470A
 Units: ug/l

Prep Date: 07/06/10 07/06/10

Metal	T55555-1			QC	T55555-1			Spikelot	QC
	Original	DUP	RPD	Limits	Original	MS	HGTXAQ40	% Rec	Limits
Mercury	0.0	0.0	NC	0-6.6	0.0	3.0	3	100.0	78-118

Associated samples MP12218: T55622-1

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

7.2.2
7

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: T55622
 Account: RFWTXHO - Weston Solutions
 Project: US Oil Recovery/400 North Richey, Pasadena, TX

QC Batch ID: MP12218
 Matrix Type: AQUEOUS
 Methods: SW846 7470A
 Units: ug/l

Prep Date: 07/06/10

Metal	T55555-1 Original MSD	Spikelot HGTXAQ40 % Rec	MSD RPD	QC Limit
Mercury	0.0	3.1	3	103.3
			3.3	

Associated samples MP12218: T55622-1

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

7.2.2
7

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: T55622

Account: RFWTXHO - Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

QC Batch ID: MP12218

Methods: SW846 7470A

Matrix Type: AQUEOUS

Units: ug/l

Prep Date: 07/06/10

Metal	BSP Result	Spikelot HGTXAQ40	% Rec	QC Limits
Mercury	3.1	3	103.3	80-120

Associated samples MP12218: T55622-1

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(anr) Analyte not requested

7.2.3
7



08/17/10

Technical Report for

Weston Solutions

US Oil Recovery/400 North Richey, Pasadena, TX

Accutest Job Number: T55856

Sampling Date: 07/07/10

Report to:

Weston Solutions

kettlerk@westonsolutions.com

ATTN: Kristie Kettler

Total number of pages in report: **50**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Paul Canevaro
Laboratory Director

Client Service contact: Sylvia Garza 713-271-4700

Certifications: TX (T104704220-09C-TX) AR (88-0756) FL (E87628) KS (E-10366) LA (85695/04004)
OK (9103) UT(7132714700)

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Test results relate only to samples analyzed.

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Sample Summary

Weston Solutions

Job No: T55856

US Oil Recovery/400 North Richey, Pasadena, TX

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
T55856-1	07/07/10	00:00 JC	07/08/10	AQ	Trip Blank Water	MCC-100707-TB
T55856-2	07/07/10	17:05 JC	07/08/10	AQ	Ground Water	MCC-WW01-11-100707
T55856-3	07/07/10	17:40 JC	07/08/10	AQ	Ground Water	MCC-WW02-11-100707

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Weston Solutions

Job No T55856

Site: US Oil Recovery/400 North Richey, Pasadena, TX

Report Date 7/9/2010 5:14:25 PM

2 Sample(s) and 1 Trip Blank(s) were collected on 07/07/2010 and were received at Accutest on 07/08/2010 properly preserved, at 3.3 Deg. C and intact. These Samples received an Accutest job number of T55856. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix AQ	Batch ID: VE10
------------------	-----------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) T55903-1MS, T55903-1MSD were used as the QC samples indicated.

Matrix AQ	Batch ID: VZ2934
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) T55804-1MS, T55804-1MSD were used as the QC samples indicated.
- Matrix Spike Recovery(s) for 1,1,2,2-Tetrachloroethane, 2-Hexanone, 4-Methyl-2-pentanone, Bromodichloromethane, Bromoform, cis-1,3-Dichloropropene, Dibromochloromethane, Methyl ethyl ketone are outside control limits. Probable cause due to matrix interference.
- Matrix Spike Duplicate Recovery(s) for 2-Hexanone, 4-Methyl-2-pentanone are outside control limits. Probable cause due to matrix interference.
- RPD(s) for MSD for Carbon disulfide, Methyl bromide are outside control limits for sample T55804-1MSD. Probable cause due to sample homogeneity.

Extractables by GCMS By Method SW846 8270C

Matrix AQ	Batch ID: OP15317
------------------	--------------------------

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) T55804-1MS, T55804-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Matrix Spike Recovery(s) for 2-Methylnaphthalene, 3,3'-Dichlorobenzidine, bis(2-Chloroethyl)ether, Nitrobenzene are outside control limits. Probable cause due to matrix interference.
- Matrix Spike Duplicate Recovery(s) for 2-Methylnaphthalene, 3,3'-Dichlorobenzidine, bis(2-Chloroethyl)ether, Hexachloroethane, Nitrobenzene are outside control limits. Probable cause due to matrix interference.
- Sample(s) OP15317-MS, OP15317-MSD have surrogates outside control limits. Probable cause due to matrix interference.
- T55856-2: Elevated reporting limits due to matrix interference.

Metals By Method SW846 6010B

Matrix AQ	Batch ID: MP12235
------------------	--------------------------

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) T55804-1DUP, T55804-1MS, T55804-1MSD, T55804-1SDL, T55804-1DUP were used as the QC samples for metals.
- Matrix Spike Recovery(s) for Magnesium, Sodium are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- RPD(s) for Duplicate for Arsenic, Beryllium, Cadmium, Cobalt are outside control limits for sample MP12235-D1. RPD acceptable due to low duplicate and sample concentrations.
- RPD(s) for Serial Dilution for Arsenic, Beryllium, Chromium, Cobalt, Copper, Lead, Vanadium are outside control limits for sample MP12235-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

Metals By Method SW846 7470A

Matrix AQ	Batch ID: MP12245
------------------	--------------------------

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) T55903-1DUP, T55903-1MS, T55903-1MSD were used as the QC samples for metals.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used



Sample Results

Report of Analysis

Report of Analysis

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3.1
3**Client Sample ID:** MCC-100707-TB**Lab Sample ID:** T55856-1**Date Sampled:** 07/07/10**Matrix:** AQ - Trip Blank Water**Date Received:** 07/08/10**Method:** SW846 8260B**Percent Solids:** n/a**Project:** US Oil Recovery/400 North Richey, Pasadena, TX

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z010325.D	1	07/08/10	NM	n/a	n/a	VZ2934
Run #2							

Purge Volume

Run #1 5.0 ml

Run #2

VOA TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
67-64-1	Acetone	4.7 U	50	4.7	ug/l	
71-43-2	Benzene	0.50 U	2.0	0.50	ug/l	
75-27-4	Bromodichloromethane	0.49 U	2.0	0.49	ug/l	
75-25-2	Bromoform	1.4 U	2.0	1.4	ug/l	
108-90-7	Chlorobenzene	0.56 U	2.0	0.56	ug/l	
75-00-3	Chloroethane	0.92 U	2.0	0.92	ug/l	
67-66-3	Chloroform	0.64 U	2.0	0.64	ug/l	
75-15-0	Carbon disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon tetrachloride	0.66 U	2.0	0.66	ug/l	
75-34-3	1,1-Dichloroethane	0.52 U	2.0	0.52	ug/l	
75-35-4	1,1-Dichloroethylene	0.50 U	2.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	0.62 U	2.0	0.62	ug/l	
78-87-5	1,2-Dichloropropane	0.62 U	2.0	0.62	ug/l	
124-48-1	Dibromochloromethane	0.61 U	2.0	0.61	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.56 U	2.0	0.56	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.48 U	2.0	0.48	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.45 U	2.0	0.45	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.68 U	2.0	0.68	ug/l	
100-41-4	Ethylbenzene	0.55 U	2.0	0.55	ug/l	
591-78-6	2-Hexanone	3.2 U	10	3.2	ug/l	
108-10-1	4-Methyl-2-pentanone	9.9 U	10	9.9	ug/l	
74-83-9	Methyl bromide	0.94 U	2.0	0.94	ug/l	
74-87-3	Methyl chloride	0.84 U	2.0	0.84	ug/l	
75-09-2	Methylene chloride	0.41 U	5.0	0.41	ug/l	
78-93-3	Methyl ethyl ketone	3.9 U	10	3.9	ug/l	
100-42-5	Styrene	0.56 U	2.0	0.56	ug/l	
71-55-6	1,1,1-Trichloroethane	0.62 U	2.0	0.62	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	1.2 U	2.0	1.2	ug/l	
79-00-5	1,1,2-Trichloroethane	0.98 U	2.0	0.98	ug/l	
127-18-4	Tetrachloroethylene	0.91 U	2.0	0.91	ug/l	
108-88-3	Toluene	0.43 U	2.0	0.43	ug/l	
79-01-6	Trichloroethylene	0.52 U	2.0	0.52	ug/l	

U = Not detected SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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3.1
3

Client Sample ID:	MCC-100707-TB	Date Sampled:	07/07/10
Lab Sample ID:	T55856-1	Date Received:	07/08/10
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	US Oil Recovery/400 North Richey, Pasadena, TX		

VOA TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
75-01-4	Vinyl chloride	1.0 U	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	1.7 U	6.0	1.7	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		79-122%
17060-07-0	1,2-Dichloroethane-D4	99%		75-121%
2037-26-5	Toluene-D8	106%		87-119%
460-00-4	4-Bromofluorobenzene	99%		80-133%

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

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3**Client Sample ID:** MCC-WW01-11-100707**Lab Sample ID:** T55856-2**Date Sampled:** 07/07/10**Matrix:** AQ - Ground Water**Date Received:** 07/08/10**Method:** SW846 8260B**Percent Solids:** n/a**Project:** US Oil Recovery/400 North Richey, Pasadena, TX

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z010326.D	1	07/08/10	NM	n/a	n/a	VZ2934
Run #2	E0000178.D	5	07/09/10	JL	n/a	n/a	VE10

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

VOA TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
67-64-1	Acetone	1390 ^a	250	24	ug/l	
71-43-2	Benzene	18.9	2.0	0.50	ug/l	
75-27-4	Bromodichloromethane	0.49 U	2.0	0.49	ug/l	
75-25-2	Bromoform	1.4 U	2.0	1.4	ug/l	
108-90-7	Chlorobenzene	0.56 U	2.0	0.56	ug/l	
75-00-3	Chloroethane	0.92 U	2.0	0.92	ug/l	
67-66-3	Chloroform	0.64 U	2.0	0.64	ug/l	
75-15-0	Carbon disulfide	18.9	2.0	0.53	ug/l	
56-23-5	Carbon tetrachloride	0.66 U	2.0	0.66	ug/l	
75-34-3	1,1-Dichloroethane	0.52 U	2.0	0.52	ug/l	
75-35-4	1,1-Dichloroethylene	0.50 U	2.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	0.62 U	2.0	0.62	ug/l	
78-87-5	1,2-Dichloropropane	0.62 U	2.0	0.62	ug/l	
124-48-1	Dibromochloromethane	0.61 U	2.0	0.61	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.56 U	2.0	0.56	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.48 U	2.0	0.48	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.45 U	2.0	0.45	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.68 U	2.0	0.68	ug/l	
100-41-4	Ethylbenzene	57.5	2.0	0.55	ug/l	
591-78-6	2-Hexanone	3.2 U	10	3.2	ug/l	
108-10-1	4-Methyl-2-pentanone	9.9 U	10	9.9	ug/l	
74-83-9	Methyl bromide	0.94 U	2.0	0.94	ug/l	
74-87-3	Methyl chloride	0.84 U	2.0	0.84	ug/l	
75-09-2	Methylene chloride	0.41 U	5.0	0.41	ug/l	
78-93-3	Methyl ethyl ketone	203	10	3.9	ug/l	
100-42-5	Styrene	0.56 U	2.0	0.56	ug/l	
71-55-6	1,1,1-Trichloroethane	0.62 U	2.0	0.62	ug/l	
79-34-5	1,1,1,2-Tetrachloroethane	1.2 U	2.0	1.2	ug/l	
79-00-5	1,1,2-Trichloroethane	0.98 U	2.0	0.98	ug/l	
127-18-4	Tetrachloroethylene	1.6	2.0	0.91	ug/l	J
108-88-3	Toluene	70.0	2.0	0.43	ug/l	
79-01-6	Trichloroethylene	1.3	2.0	0.52	ug/l	J

U = Not detected SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	MCC-WW01-11-100707	Date Sampled:	07/07/10
Lab Sample ID:	T55856-2	Date Received:	07/08/10
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	US Oil Recovery/400 North Richey, Pasadena, TX		

VOA TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
75-01-4	Vinyl chloride	1.0 U	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	426	6.0	1.7	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%	92%	79-122%
17060-07-0	1,2-Dichloroethane-D4	99%	89%	75-121%
2037-26-5	Toluene-D8	104%	93%	87-119%
460-00-4	4-Bromofluorobenzene	97%	89%	80-133%

(a) Result is from Run# 2

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

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3**Client Sample ID:** MCC-WW01-11-100707**Lab Sample ID:** T55856-2**Date Sampled:** 07/07/10**Matrix:** AQ - Ground Water**Date Received:** 07/08/10**Method:** SW846 8270C SW846 3510C**Percent Solids:** n/a**Project:** US Oil Recovery/400 North Richey, Pasadena, TX

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	P11929.D	10	07/08/10	GJ	07/08/10	OP15317	EP561
Run #2							

	Initial Volume	Final Volume
Run #1	950 ml	1.0 ml
Run #2		

ABN TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
65-85-0	Benzoic Acid	364	110	52	ug/l	
95-57-8	2-Chlorophenol	13 U	53	13	ug/l	
59-50-7	4-Chloro-3-methyl phenol	12 U	53	12	ug/l	
120-83-2	2,4-Dichlorophenol	23 U	53	23	ug/l	
105-67-9	2,4-Dimethylphenol	13 U	53	13	ug/l	
51-28-5	2,4-Dinitrophenol	160 U	260	160	ug/l	
534-52-1	4,6-Dinitro-o-cresol	14 U	110	14	ug/l	
95-48-7	2-Methylphenol	27.7	53	8.8	ug/l	J
	3&4-Methylphenol	1080	53	17	ug/l	
88-75-5	2-Nitrophenol	21 U	53	21	ug/l	
100-02-7	4-Nitrophenol	70 U	260	70	ug/l	
87-86-5	Pentachlorophenol	140 U	260	140	ug/l	
108-95-2	Phenol	184	53	7.9	ug/l	
95-95-4	2,4,5-Trichlorophenol	12 U	53	12	ug/l	
88-06-2	2,4,6-Trichlorophenol	12 U	53	12	ug/l	
83-32-9	Acenaphthene	16 U	53	16	ug/l	
208-96-8	Acenaphthylene	13 U	53	13	ug/l	
120-12-7	Anthracene	12 U	53	12	ug/l	
56-55-3	Benzo(a)anthracene	11 U	53	11	ug/l	
50-32-8	Benzo(a)pyrene	11 U	53	11	ug/l	
205-99-2	Benzo(b)fluoranthene	9.1 U	53	9.1	ug/l	
191-24-2	Benzo(g,h,i)perylene	17 U	53	17	ug/l	
207-08-9	Benzo(k)fluoranthene	11 U	53	11	ug/l	
101-55-3	4-Bromophenyl phenyl ether	15 U	53	15	ug/l	
85-68-7	Butyl benzyl phthalate	17 U	53	17	ug/l	
100-51-6	Benzyl Alcohol	14 U	53	14	ug/l	
91-58-7	2-Chloronaphthalene	15 U	53	15	ug/l	
106-47-8	4-Chloroaniline	45 U	53	45	ug/l	
86-74-8	Carbazole	16 U	53	16	ug/l	
218-01-9	Chrysene	10 U	53	10	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	14 U	53	14	ug/l	
111-44-4	bis(2-Chloroethyl)ether	14 U	53	14	ug/l	

U = Not detected SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MCC-WW01-11-100707	Date Sampled:	07/07/10
Lab Sample ID:	T55856-2	Date Received:	07/08/10
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	US Oil Recovery/400 North Richey, Pasadena, TX		

ABN TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
108-60-1	bis(2-Chloroisopropyl)ether	21 U	53	21	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	14 U	53	14	ug/l	
95-50-1	1,2-Dichlorobenzene	13 U	53	13	ug/l	
541-73-1	1,3-Dichlorobenzene	13 U	53	13	ug/l	
106-46-7	1,4-Dichlorobenzene	14 U	53	14	ug/l	
121-14-2	2,4-Dinitrotoluene	15 U	53	15	ug/l	
606-20-2	2,6-Dinitrotoluene	14 U	53	14	ug/l	
91-94-1	3,3'-Dichlorobenzidine	34 U	110	34	ug/l	
53-70-3	Dibenzo(a,h)anthracene	16 U	53	16	ug/l	
132-64-9	Dibenzofuran	14 U	53	14	ug/l	
84-74-2	Di-n-butyl phthalate	12.6	53	11	ug/l	J
117-84-0	Di-n-octyl phthalate	14 U	53	14	ug/l	
84-66-2	Diethyl phthalate	11 U	53	11	ug/l	
131-11-3	Dimethyl phthalate	11 U	53	11	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	37.3	53	19	ug/l	J
206-44-0	Fluoranthene	10 U	53	10	ug/l	
86-73-7	Fluorene	14 U	53	14	ug/l	
118-74-1	Hexachlorobenzene	14 U	53	14	ug/l	
87-68-3	Hexachlorobutadiene	12 U	53	12	ug/l	
77-47-4	Hexachlorocyclopentadiene	54 U	110	54	ug/l	
67-72-1	Hexachloroethane	10 U	53	10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	19 U	53	19	ug/l	
78-59-1	Isophorone	13 U	53	13	ug/l	
91-57-6	2-Methylnaphthalene	26.0	53	13	ug/l	J
88-74-4	2-Nitroaniline	15 U	53	15	ug/l	
99-09-2	3-Nitroaniline	35 U	53	35	ug/l	
100-01-6	4-Nitroaniline	25 U	53	25	ug/l	
91-20-3	Naphthalene	66.5	53	12	ug/l	
98-95-3	Nitrobenzene	18 U	53	18	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	15 U	53	15	ug/l	
86-30-6	N-Nitrosodiphenylamine	18 U	53	18	ug/l	
85-01-8	Phenanthrene	14.1	53	10	ug/l	J
129-00-0	Pyrene	17 U	53	17	ug/l	
120-82-1	1,2,4-Trichlorobenzene	13 U	53	13	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	40%		10-66%
4165-62-2	Phenol-d5	37%		10-53%
118-79-6	2,4,6-Tribromophenol	93%		32-128%

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	MCC-WW01-11-100707	Date Sampled:	07/07/10
Lab Sample ID:	T55856-2	Date Received:	07/08/10
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	US Oil Recovery/400 North Richey, Pasadena, TX		

ABN TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	82%		29-115%
321-60-8	2-Fluorobiphenyl	91%		34-113%
1718-51-0	Terphenyl-d14	82%		12-145%

(a) Elevated reporting limits due to matrix interference. High concentration of non-target compounds were detected in the sample.

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID: MCC-WW01-11-100707

Lab Sample ID: T55856-2

Date Sampled: 07/07/10

Matrix: AQ - Ground Water

Date Received: 07/08/10

Percent Solids: n/a

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Total Metals Analysis

Analyte	Result	MQL	SDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	0.777	0.20	0.012	mg/l	1	07/08/10	07/09/10 TW	SW846 6010B ²	SW846 3010A ³
Antimony	0.0053	0.0050	0.0010	mg/l	1	07/08/10	07/09/10 TW	SW846 6010B ²	SW846 3010A ³
Arsenic	0.0107	0.0050	0.0010	mg/l	1	07/08/10	07/09/10 TW	SW846 6010B ²	SW846 3010A ³
Barium	0.0411 B	0.20	0.0034	mg/l	1	07/08/10	07/09/10 TW	SW846 6010B ²	SW846 3010A ³
Beryllium	0.00016 U	0.0050	0.00016	mg/l	1	07/08/10	07/09/10 TW	SW846 6010B ²	SW846 3010A ³
Cadmium	0.00026 B	0.0040	0.000090	mg/l	1	07/08/10	07/09/10 TW	SW846 6010B ²	SW846 3010A ³
Calcium	62.1	5.0	0.025	mg/l	1	07/08/10	07/09/10 TW	SW846 6010B ²	SW846 3010A ³
Chromium	0.0119	0.010	0.00027	mg/l	1	07/08/10	07/09/10 TW	SW846 6010B ²	SW846 3010A ³
Cobalt	0.0058 B	0.050	0.00022	mg/l	1	07/08/10	07/09/10 TW	SW846 6010B ²	SW846 3010A ³
Copper	0.0237 B	0.025	0.0059	mg/l	1	07/08/10	07/09/10 TW	SW846 6010B ²	SW846 3010A ³
Iron	1.34	0.10	0.023	mg/l	1	07/08/10	07/09/10 TW	SW846 6010B ²	SW846 3010A ³
Lead	0.0075	0.0030	0.0018	mg/l	1	07/08/10	07/09/10 TW	SW846 6010B ²	SW846 3010A ³
Magnesium	8.30	5.0	0.0079	mg/l	1	07/08/10	07/09/10 TW	SW846 6010B ²	SW846 3010A ³
Manganese	0.222	0.015	0.0019	mg/l	1	07/08/10	07/09/10 TW	SW846 6010B ²	SW846 3010A ³
Mercury	0.00025	0.00020	0.000094	mg/l	1	07/09/10	07/09/10 CN	SW846 7470A ¹	SW846 7470A ⁴
Nickel	0.0800	0.040	0.0014	mg/l	1	07/08/10	07/09/10 TW	SW846 6010B ²	SW846 3010A ³
Potassium	37.1	5.0	0.045	mg/l	1	07/08/10	07/09/10 TW	SW846 6010B ²	SW846 3010A ³
Selenium	0.00098 U	0.0050	0.00098	mg/l	1	07/08/10	07/09/10 TW	SW846 6010B ²	SW846 3010A ³
Silver	0.00082 B	0.010	0.00024	mg/l	1	07/08/10	07/09/10 TW	SW846 6010B ²	SW846 3010A ³
Sodium	455	5.0	0.10	mg/l	1	07/08/10	07/09/10 TW	SW846 6010B ²	SW846 3010A ³
Thallium	0.0012 U	0.010	0.0012	mg/l	1	07/08/10	07/09/10 TW	SW846 6010B ²	SW846 3010A ³
Vanadium	0.0113 B	0.050	0.00030	mg/l	1	07/08/10	07/09/10 TW	SW846 6010B ²	SW846 3010A ³
Zinc	0.189	0.020	0.0035	mg/l	1	07/08/10	07/09/10 TW	SW846 6010B ²	SW846 3010A ³

(1) Instrument QC Batch: MA4895

(2) Instrument QC Batch: MA4896

(3) Prep QC Batch: MP12235

(4) Prep QC Batch: MP12245

MQL = Method Quantitation Limit

SDL = Sample Detection Limit

U = Indicates a result < SDL

B = Indicates a result > = SDL but < MQL

Report of Analysis

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3**Client Sample ID:** MCC-WW02-11-100707**Lab Sample ID:** T55856-3**Date Sampled:** 07/07/10**Matrix:** AQ - Ground Water**Date Received:** 07/08/10**Method:** SW846 8260B**Percent Solids:** n/a**Project:** US Oil Recovery/400 North Richey, Pasadena, TX

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z010327.D	1	07/08/10	NM	n/a	n/a	VZ2934
Run #2	E0000179.D	25	07/09/10	JL	n/a	n/a	VE10

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

VOA TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
67-64-1	Acetone	14000 ^a	1300	120	ug/l	
71-43-2	Benzene	46.4	2.0	0.50	ug/l	
75-27-4	Bromodichloromethane	0.49 U	2.0	0.49	ug/l	
75-25-2	Bromoform	1.4 U	2.0	1.4	ug/l	
108-90-7	Chlorobenzene	0.56 U	2.0	0.56	ug/l	
75-00-3	Chloroethane	0.92 U	2.0	0.92	ug/l	
67-66-3	Chloroform	0.64 U	2.0	0.64	ug/l	
75-15-0	Carbon disulfide	34.5	2.0	0.53	ug/l	
56-23-5	Carbon tetrachloride	0.66 U	2.0	0.66	ug/l	
75-34-3	1,1-Dichloroethane	0.52 U	2.0	0.52	ug/l	
75-35-4	1,1-Dichloroethylene	0.50 U	2.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	0.62 U	2.0	0.62	ug/l	
78-87-5	1,2-Dichloropropane	0.62 U	2.0	0.62	ug/l	
124-48-1	Dibromochloromethane	0.61 U	2.0	0.61	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.56 U	2.0	0.56	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.48 U	2.0	0.48	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.45 U	2.0	0.45	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.68 U	2.0	0.68	ug/l	
100-41-4	Ethylbenzene	757 ^a	50	14	ug/l	
591-78-6	2-Hexanone	4.3	10	3.2	ug/l	J
108-10-1	4-Methyl-2-pentanone	9.9 U	10	9.9	ug/l	
74-83-9	Methyl bromide	0.94 U	2.0	0.94	ug/l	
74-87-3	Methyl chloride	0.84 U	2.0	0.84	ug/l	
75-09-2	Methylene chloride	0.41 U	5.0	0.41	ug/l	
78-93-3	Methyl ethyl ketone	198	10	3.9	ug/l	
100-42-5	Styrene	0.56 U	2.0	0.56	ug/l	
71-55-6	1,1,1-Trichloroethane	0.62 U	2.0	0.62	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	1.2 U	2.0	1.2	ug/l	
79-00-5	1,1,2-Trichloroethane	0.98 U	2.0	0.98	ug/l	
127-18-4	Tetrachloroethylene	0.91 U	2.0	0.91	ug/l	
108-88-3	Toluene	258 ^a	50	11	ug/l	
79-01-6	Trichloroethylene	0.79	2.0	0.52	ug/l	J

U = Not detected SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 2 of 2

Client Sample ID:	MCC-WW02-11-100707	Date Sampled:	07/07/10
Lab Sample ID:	T55856-3	Date Received:	07/08/10
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	US Oil Recovery/400 North Richey, Pasadena, TX		

VOA TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
75-01-4	Vinyl chloride	1.0 U	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	4320 ^a	150	42	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%	90%	79-122%
17060-07-0	1,2-Dichloroethane-D4	93%	86%	75-121%
2037-26-5	Toluene-D8	100%	90%	87-119%
460-00-4	4-Bromofluorobenzene	105%	89%	80-133%

(a) Result is from Run# 2

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound



Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

832-444-7976

Lab Phone: 713-271-4700

4.1

CHAIN OF CUSTODY #

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SAMPLE INSPECTION FORM

Accutest Job Number: T55856 Client: Weston Solutions Date/Time Received: 7-8-10 0940
 # of Coolers Received: 1 Thermometer #: #110 Temperature Adjustment Factor: -0.5°C
 Cooler Temps: #1: 3.3°C #2: _____ #3: _____ #4: _____ #5: _____ #6: _____ #7: _____ #8: _____
 Method of Delivery: FEDEX UPS Accutest Courier Greyhound Delivery Other
 Airbill Numbers: _____

COOLER INFORMATION

☐ Custody seal missing or not intact
☐ Temperature criteria not met
☐ Wet ice received in cooler

CHAIN OF CUSTODY

☐ Chain of Custody not received
☐ Sample D/T unclear or missing
☐ Analyses unclear or missing
☐ COC not properly executed

SAMPLE INFORMATION

☐ Sample containers received broken
☐ VOC vials have headspace
☐ Sample labels missing or illegible
☒ ID on COC does not match label(s)
☐ D/T on COC does not match label(s)
☐ Sample/Bottles rcvd but no analysis on COC
☐ Sample listed on COC, but not received
☐ Bottles missing for requested analysis
☐ Insufficient volume for analysis
☐ Sample received improperly preserved

TRIP BLANK INFORMATION

☐ Trip Blank on COC but not received
☐ Trip Blank received but not on COC
☐ Trip Blank not intact
☒ Received Water Trip Blank
☐ Received Soil TB

Number of Encores? _____
 Number of 5035 kits? _____
 Number of lab-filtered metals? _____

Summary of Discrepancies:
Tiny air bubbles, less than pea size in 2 vials - MCC-WW02-11-100707,
Sample MCC-100707-TB on COC received labeled as TRIP BLANK.

TECHNICIAN SIGNATURE/DATE: Daniel Rudelle 7-8-10
 INFORMATION AND SAMPLE LABELING VERIFIED BY: SC 7-8-10

* * * * * CORRECTIVE ACTIONS * * * * *

Client Representative Notified: _____ Date: _____
 By Accutest Representative: _____ Via: Phone Email
 Client Instructions: _____

I:\mwalker\form\samplemanagement

T55856: Chain of Custody
 Page 2 of 3

SAMPLE RECEIPT LOG

JOB #: T55856 DATE/TIME RECEIVED: 7-8-10 0940

CLIENT: Weston Solutions INITIALS: DEA

[illegible]

PRESERVATIVES: 1: None 2: HCL 3: HNO3 4: H2SO4 5: NAOH 6: DI 7: MeOH 8: Other
LOCATION: 1: Walk-In #1 (Waters) 2: Walk-In #2 (Soils) VR: Volatile Fridge M: Metals SUB: Subcontract EF: Encore Freezer

Rev 8/13/01 sup

4.1

T55856: Chain of Custody
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GC/MS Volatiles

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QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 2

Job Number: T55856

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ2934-MB	Z010315.D	1	07/08/10	NM	n/a	n/a	VZ2934

The QC reported here applies to the following samples:

Method: SW846 8260B

T55856-1, T55856-2, T55856-3

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	4.7	ug/l	
71-43-2	Benzene	ND	2.0	0.50	ug/l	
75-27-4	Bromodichloromethane	ND	2.0	0.49	ug/l	
75-25-2	Bromoform	ND	2.0	1.4	ug/l	
108-90-7	Chlorobenzene	ND	2.0	0.56	ug/l	
75-00-3	Chloroethane	ND	2.0	0.92	ug/l	
67-66-3	Chloroform	ND	2.0	0.64	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.53	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	0.66	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	0.52	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	0.62	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	0.62	ug/l	
124-48-1	Dibromochloromethane	ND	2.0	0.61	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	2.0	0.56	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	0.48	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	2.0	0.45	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	0.68	ug/l	
100-41-4	Ethylbenzene	ND	2.0	0.55	ug/l	
591-78-6	2-Hexanone	ND	10	3.2	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	9.9	ug/l	
74-83-9	Methyl bromide	ND	2.0	0.94	ug/l	
74-87-3	Methyl chloride	ND	2.0	0.84	ug/l	
75-09-2	Methylene chloride	ND	5.0	0.41	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	3.9	ug/l	
100-42-5	Styrene	ND	2.0	0.56	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	0.62	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	1.2	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	0.98	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	0.91	ug/l	
108-88-3	Toluene	ND	2.0	0.43	ug/l	
79-01-6	Trichloroethylene	ND	2.0	0.52	ug/l	
75-01-4	Vinyl chloride	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	1.7	ug/l	

Method Blank Summary

Job Number: T55856
Account: RFWTXHO Weston Solutions
Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ2934-MB	Z010315.D	1	07/08/10	NM	n/a	n/a	VZ2934

The QC reported here applies to the following samples:

Method: SW846 8260B

T55856-1, T55856-2, T55856-3

CAS No.	Surrogate Recoveries	Limits	
1868-53-7	Dibromofluoromethane	102%	79-122%
17060-07-0	1,2-Dichloroethane-D4	99%	75-121%
2037-26-5	Toluene-D8	103%	87-119%
460-00-4	4-Bromofluorobenzene	100%	80-133%

Method Blank Summary

Page 1 of 1

Job Number: T55856

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE10-MB	E0000177.D	1	07/09/10	JL	n/a	n/a	VE10

The QC reported here applies to the following samples:

Method: SW846 8260B

T55856-2, T55856-3

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	4.7	ug/l	
100-41-4	Ethylbenzene	ND	2.0	0.55	ug/l	
108-88-3	Toluene	ND	2.0	0.43	ug/l	
1330-20-7	Xylene (total)	ND	6.0	1.7	ug/l	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	90% 79-122%
17060-07-0	1,2-Dichloroethane-D4	88% 75-121%
2037-26-5	Toluene-D8	90% 87-119%
460-00-4	4-Bromofluorobenzene	90% 80-133%

5.1.2

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Blank Spike Summary

Page 1 of 2

Job Number: T55856

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ2934-BS	Z010313.D	1	07/08/10	NM	n/a	n/a	VZ2934

The QC reported here applies to the following samples:

Method: SW846 8260B

T55856-1, T55856-2, T55856-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	116	93	62-124
71-43-2	Benzene	25	26.1	104	76-118
75-27-4	Bromodichloromethane	25	26.0	104	68-107
75-25-2	Bromoform	25	23.8	95	64-103
108-90-7	Chlorobenzene	25	25.2	101	74-111
75-00-3	Chloroethane	25	21.4	86	75-135
67-66-3	Chloroform	25	25.9	104	75-117
75-15-0	Carbon disulfide	25	28.2	113	57-126
56-23-5	Carbon tetrachloride	25	27.7	111	75-125
75-34-3	1,1-Dichloroethane	25	26.8	107	76-121
75-35-4	1,1-Dichloroethylene	25	25.8	103	71-128
107-06-2	1,2-Dichloroethane	25	24.5	98	70-111
78-87-5	1,2-Dichloropropane	25	25.9	104	71-113
124-48-1	Dibromochloromethane	25	24.6	98	69-104
156-59-2	cis-1,2-Dichloroethylene	25	27.2	109	68-113
10061-01-5	cis-1,3-Dichloropropene	25	25.8	103	71-111
156-60-5	trans-1,2-Dichloroethylene	25	25.8	103	70-125
10061-02-6	trans-1,3-Dichloropropene	25	25.1	100	75-111
100-41-4	Ethylbenzene	25	25.6	102	75-112
591-78-6	2-Hexanone	125	119	95	60-113
108-10-1	4-Methyl-2-pentanone	125	117	94	63-115
74-83-9	Methyl bromide	25	20.6	82	59-132
74-87-3	Methyl chloride	25	21.6	86	56-150
75-09-2	Methylene chloride	25	22.5	90	70-113
78-93-3	Methyl ethyl ketone	125	132	106	62-117
100-42-5	Styrene	25	23.6	94	66-100
71-55-6	1,1,1-Trichloroethane	25	26.0	104	76-125
79-34-5	1,1,2,2-Tetrachloroethane	25	24.1	96	67-110
79-00-5	1,1,2-Trichloroethane	25	23.5	94	69-107
127-18-4	Tetrachloroethylene	25	27.3	109	77-120
108-88-3	Toluene	25	25.1	100	77-114
79-01-6	Trichloroethylene	25	27.5	110	74-117
75-01-4	Vinyl chloride	25	23.4	94	64-121
1330-20-7	Xylene (total)	75	74.8	100	75-111

Blank Spike Summary

Job Number: T55856
Account: RFWTXHO Weston Solutions
Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ2934-BS	Z010313.D	1	07/08/10	NM	n/a	n/a	VZ2934

The QC reported here applies to the following samples: Method: SW846 8260B

T55856-1, T55856-2, T55856-3

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	103%	79-122%
17060-07-0	1,2-Dichloroethane-D4	99%	75-121%
2037-26-5	Toluene-D8	103%	87-119%
460-00-4	4-Bromofluorobenzene	97%	80-133%

Blank Spike Summary

Page 1 of 1

Job Number: T55856

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE10-BS	E0000176.D	1	07/09/10	JL	n/a	n/a	VE10

The QC reported here applies to the following samples:

Method: SW846 8260B

T55856-2, T55856-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	127	102	62-124
100-41-4	Ethylbenzene	25	27.0	108	75-112
108-88-3	Toluene	25	26.5	106	77-114
1330-20-7	Xylene (total)	75	80.2	107	75-111

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	89%	79-122%
17060-07-0	1,2-Dichloroethane-D4	88%	75-121%
2037-26-5	Toluene-D8	91%	87-119%
460-00-4	4-Bromofluorobenzene	88%	80-133%

5.2.2

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Matrix Spike/Matrix Spike Duplicate Summary

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Job Number: T55856

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T55804-1MS	Z010321.D	1	07/08/10	NM	n/a	n/a	VZ2934
T55804-1MSD	Z010322.D	1	07/08/10	NM	n/a	n/a	VZ2934
T55804-1	Z010320.D	1	07/08/10	NM	n/a	n/a	VZ2934

The QC reported here applies to the following samples:

Method: SW846 8260B

T55856-1, T55856-2, T55856-3

CAS No.	Compound	T55804-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	50 U		125	124	99	117	94	6	62-124/21
71-43-2	Benzene	2.0 U		25	28.1	112	26.6	106	5	76-118/16
75-27-4	Bromodichloromethane	2.0 U		25	27.6	110*	26.4	106	4	68-107/12
75-25-2	Bromoform	2.0 U		25	26.3	105*	24.0	96	9	64-103/14
108-90-7	Chlorobenzene	2.0 U		25	26.5	106	25.2	101	5	74-111/11
75-00-3	Chloroethane	2.0 U		25	22.1	88	19.5	78	13	75-135/15
67-66-3	Chloroform	2.0 U		25	27.7	111	26.2	105	6	75-117/12
75-15-0	Carbon disulfide	2.0 U		25	31.2	125	26.8	107	15*	57-126/13
56-23-5	Carbon tetrachloride	2.0 U		25	30.0	120	27.6	110	8	75-125/12
75-34-3	1,1-Dichloroethane	2.0 U		25	27.7	111	27.6	110	0	76-121/13
75-35-4	1,1-Dichloroethylene	2.0 U		25	28.7	115	24.8	99	15	71-128/19
107-06-2	1,2-Dichloroethane	2.0 U		25	26.6	106	26.5	106	0	70-111/14
78-87-5	1,2-Dichloropropane	2.0 U		25	27.5	110	26.1	104	5	71-113/12
124-48-1	Dibromochloromethane	2.0 U		25	26.2	105*	25.6	102	2	69-104/12
156-59-2	cis-1,2-Dichloroethylene	2.0 U		25	28.3	113	27.9	112	1	68-113/13
10061-01-5	cis-1,3-Dichloropropene	2.0 U		25	28.2	113*	26.3	105	7	71-111/12
156-60-5	trans-1,2-Dichloroethylene	2.0 U		25	28.7	115	27.6	110	4	70-125/14
10061-02-6	trans-1,3-Dichloropropene	2.0 U		25	27.3	109	25.8	103	6	75-111/12
100-41-4	Ethylbenzene	2.0 U		25	27.0	108	25.4	102	6	75-112/12
591-78-6	2-Hexanone	10 U		125	162	130*	151	121*	7	60-113/18
108-10-1	4-Methyl-2-pentanone	10 U		125	170	136*	153	122*	11	63-115/21
74-83-9	Methyl bromide	2.0 U		25	21.1	84	17.8	71	17*	59-132/15
74-87-3	Methyl chloride	2.0 U		25	22.8	91	20.7	83	10	56-150/17
75-09-2	Methylene chloride	5.0 U		25	24.5	98	22.3	89	9	70-113/13
78-93-3	Methyl ethyl ketone	10 U		125	149	119*	141	113	6	62-117/21
100-42-5	Styrene	2.0 U		25	24.9	100	23.4	94	6	66-100/11
71-55-6	1,1,1-Trichloroethane	2.0 U		25	28.5	114	26.2	105	8	76-125/11
79-34-5	1,1,2,2-Tetrachloroethane	2.0 U		25	27.9	112*	27.1	108	3	67-110/20
79-00-5	1,1,2-Trichloroethane	2.0 U		25	25.5	102	24.5	98	4	69-107/14
127-18-4	Tetrachloroethylene	2.0 U		25	28.2	113	27.1	108	4	77-120/13
108-88-3	Toluene	2.0 U		25	27.1	108	25.2	101	7	77-114/12
79-01-6	Trichloroethylene	2.0 U		25	29.3	117	27.7	111	6	74-117/12
75-01-4	Vinyl chloride	2.0 U		25	24.3	97	20.3	81	18	64-121/19
1330-20-7	Xylene (total)	6.0 U		75	80.4	107	75.0	100	7	75-111/12

Matrix Spike/Matrix Spike Duplicate Summary

Page 2 of 2

Job Number: T55856

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T55804-1MS	Z010321.D	1	07/08/10	NM	n/a	n/a	VZ2934
T55804-1MSD	Z010322.D	1	07/08/10	NM	n/a	n/a	VZ2934
T55804-1	Z010320.D	1	07/08/10	NM	n/a	n/a	VZ2934

The QC reported here applies to the following samples:

Method: SW846 8260B

T55856-1, T55856-2, T55856-3

CAS No.	Surrogate Recoveries	MS	MSD	T55804-1	Limits
1868-53-7	Dibromofluoromethane	104%	96%	101%	79-122%
17060-07-0	1,2-Dichloroethane-D4	100%	94%	102%	75-121%
2037-26-5	Toluene-D8	104%	97%	103%	87-119%
460-00-4	4-Bromofluorobenzene	101%	95%	102%	80-133%

5.3.1
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Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: T55856

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T55903-1MS	E0000184.D	1	07/09/10	JL	n/a	n/a	VE10
T55903-1MSD	E0000185.D	1	07/09/10	JL	n/a	n/a	VE10
T55903-1	E0000183.D	1	07/09/10	JL	n/a	n/a	VE10

The QC reported here applies to the following samples:

Method: SW846 8260B

T55856-2, T55856-3

CAS No.	Compound	T55903-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	50 U		125	115	92	126	101	9	62-124/21
100-41-4	Ethylbenzene	2.0 U		25	25.9	104	24.9	100	4	75-112/12
108-88-3	Toluene	2.0 U		25	25.6	102	24.7	99	4	77-114/12
1330-20-7	Xylene (total)	6.0 U		75	75.8	101	71.6	95	6	75-111/12

CAS No.	Surrogate Recoveries	MS	MSD	T55903-1	Limits
1868-53-7	Dibromofluoromethane	90%	91%	89%	79-122%
17060-07-0	1,2-Dichloroethane-D4	89%	90%	89%	75-121%
2037-26-5	Toluene-D8	93%	91%	90%	87-119%
460-00-4	4-Bromofluorobenzene	89%	90%	90%	80-133%



GC/MS Semi-volatiles



QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 3

Job Number: T55856

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP15317-MB	P11911.D	1	07/08/10	GJ	07/08/10	OP15317	EP561

The QC reported here applies to the following samples:

Method: SW846 8270C

T55856-2

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	10	5.0	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	1.2	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.0	1.2	ug/l	
120-83-2	2,4-Dichlorophenol	ND	5.0	2.2	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.0	1.3	ug/l	
51-28-5	2,4-Dinitrophenol	ND	25	15	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	1.4	ug/l	
95-48-7	2-Methylphenol	ND	5.0	0.83	ug/l	
	3&4-Methylphenol	ND	5.0	1.6	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	2.0	ug/l	
100-02-7	4-Nitrophenol	ND	25	6.7	ug/l	
87-86-5	Pentachlorophenol	ND	25	13	ug/l	
108-95-2	Phenol	ND	5.0	0.75	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.0	1.2	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	1.1	ug/l	
83-32-9	Acenaphthene	ND	5.0	1.6	ug/l	
208-96-8	Acenaphthylene	ND	5.0	1.2	ug/l	
120-12-7	Anthracene	ND	5.0	1.1	ug/l	
56-55-3	Benzo(a)anthracene	ND	5.0	1.1	ug/l	
50-32-8	Benzo(a)pyrene	ND	5.0	1.1	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	5.0	0.87	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	5.0	1.7	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	5.0	1.1	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	1.4	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	1.6	ug/l	
100-51-6	Benzyl Alcohol	ND	5.0	1.3	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	1.4	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	4.3	ug/l	
86-74-8	Carbazole	ND	5.0	1.5	ug/l	
218-01-9	Chrysene	ND	5.0	0.98	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	1.3	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	1.3	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	2.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	1.3	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	5.0	1.3	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	5.0	1.3	ug/l	

Method Blank Summary

Page 2 of 3

Job Number: T55856
Account: RFWTXHO Weston Solutions
Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP15317-MB	P11911.D	1	07/08/10	GJ	07/08/10	OP15317	EP561

The QC reported here applies to the following samples:

Method: SW846 8270C

T55856-2

CAS No.	Compound	Result	RL	MDL	Units	Q
106-46-7	1,4-Dichlorobenzene	ND	5.0	1.3	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	5.0	1.4	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	5.0	1.3	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	10	3.2	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	5.0	1.6	ug/l	
132-64-9	Dibenzofuran	ND	5.0	1.3	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.0	1.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	1.3	ug/l	
84-66-2	Diethyl phthalate	ND	5.0	1.1	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	1.1	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	5.0	1.8	ug/l	
206-44-0	Fluoranthene	ND	5.0	0.97	ug/l	
86-73-7	Fluorene	ND	5.0	1.3	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	1.3	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	1.1	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	5.2	ug/l	
67-72-1	Hexachloroethane	ND	5.0	0.97	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	5.0	1.8	ug/l	
78-59-1	Isophorone	ND	5.0	1.2	ug/l	
91-57-6	2-Methylnaphthalene	ND	5.0	1.3	ug/l	
88-74-4	2-Nitroaniline	ND	5.0	1.4	ug/l	
99-09-2	3-Nitroaniline	ND	5.0	3.3	ug/l	
100-01-6	4-Nitroaniline	ND	5.0	2.3	ug/l	
91-20-3	Naphthalene	ND	5.0	1.1	ug/l	
98-95-3	Nitrobenzene	ND	5.0	1.7	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	1.4	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	1.7	ug/l	
85-01-8	Phenanthrene	ND	5.0	0.97	ug/l	
129-00-0	Pyrene	ND	5.0	1.7	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	1.3	ug/l	

CAS No.	Surrogate Recoveries	Limits
367-12-4	2-Fluorophenol	54% 10-66%
4165-62-2	Phenol-d5	46% 10-53%

Method Blank Summary

Job Number: T55856
Account: RFWTXHO Weston Solutions
Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP15317-MB	P11911.D	1	07/08/10	GJ	07/08/10	OP15317	EP561

The QC reported here applies to the following samples: Method: SW846 8270C

T55856-2

CAS No.	Surrogate Recoveries	Limits	
118-79-6	2,4,6-Tribromophenol	75%	32-128%
4165-60-0	Nitrobenzene-d5	86%	29-115%
321-60-8	2-Fluorobiphenyl	88%	34-113%
1718-51-0	Terphenyl-d14	83%	12-145%

Blank Spike Summary

Page 1 of 3

Job Number: T55856

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP15317-BS	P11910.D	1	07/08/10	GJ	07/08/10	OP15317	EP561

The QC reported here applies to the following samples:

Method: SW846 8270C

T55856-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
65-85-0	Benzoic Acid	50	27.2	54	10-68
95-57-8	2-Chlorophenol	50	33.7	67	39-93
59-50-7	4-Chloro-3-methyl phenol	50	35.9	72	43-109
120-83-2	2,4-Dichlorophenol	50	35.0	70	42-106
105-67-9	2,4-Dimethylphenol	50	32.9	66	27-87
51-28-5	2,4-Dinitrophenol	50	38.5	77	43-107
534-52-1	4,6-Dinitro-o-cresol	50	43.3	87	47-112
95-48-7	2-Methylphenol	50	28.7	57	25-84
	3&4-Methylphenol	100	52.2	52	25-77
88-75-5	2-Nitrophenol	50	34.7	69	38-96
100-02-7	4-Nitrophenol	50	12.7	25	13-70
87-86-5	Pentachlorophenol	50	35.7	71	46-153
108-95-2	Phenol	50	17.3	35	10-53
95-95-4	2,4,5-Trichlorophenol	50	38.2	76	40-101
88-06-2	2,4,6-Trichlorophenol	50	35.1	70	41-102
83-32-9	Acenaphthene	50	30.3	61	41-110
208-96-8	Acenaphthylene	50	31.9	64	49-113
120-12-7	Anthracene	50	43.8	88	59-105
56-55-3	Benzo(a)anthracene	50	45.2	90	64-112
50-32-8	Benzo(a)pyrene	50	43.2	86	62-116
205-99-2	Benzo(b)fluoranthene	50	46.2	92	62-114
191-24-2	Benzo(g,h,i)perylene	50	51.2	102	55-124
207-08-9	Benzo(k)fluoranthene	50	49.8	100	62-119
101-55-3	4-Bromophenyl phenyl ether	50	39.2	78	56-99
85-68-7	Butyl benzyl phthalate	50	42.8	86	52-125
100-51-6	Benzyl Alcohol	50	28.3	57	28-83
91-58-7	2-Chloronaphthalene	50	28.9	58	42-97
106-47-8	4-Chloroaniline	50	42.9	86	37-128
86-74-8	Carbazole	50	44.7	89	59-142
218-01-9	Chrysene	50	46.0	92	67-112
111-91-1	bis(2-Chloroethoxy)methane	50	34.1	68	38-96
111-44-4	bis(2-Chloroethyl)ether	50	37.7	75	37-91
108-60-1	bis(2-Chloroisopropyl)ether	50	30.2	60	36-102
7005-72-3	4-Chlorophenyl phenyl ether	50	38.2	76	48-101
95-50-1	1,2-Dichlorobenzene	50	27.2	54	33-86
541-73-1	1,3-Dichlorobenzene	50	23.8	48	21-88

Blank Spike Summary

Page 2 of 3

Job Number: T55856

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP15317-BS	P11910.D	1	07/08/10	GJ	07/08/10	OP15317	EP561

The QC reported here applies to the following samples:

Method: SW846 8270C

T55856-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
106-46-7	1,4-Dichlorobenzene	50	26.6	53	31-86
121-14-2	2,4-Dinitrotoluene	50	47.9	96	55-112
606-20-2	2,6-Dinitrotoluene	50	41.3	83	57-105
91-94-1	3,3'-Dichlorobenzidine	50	34.1	68	50-142
53-70-3	Dibenzo(a,h)anthracene	50	53.7	107	55-123
132-64-9	Dibenzofuran	50	35.6	71	45-99
84-74-2	Di-n-butyl phthalate	50	45.6	91	64-114
117-84-0	Di-n-octyl phthalate	50	47.1	94	55-118
84-66-2	Diethyl phthalate	50	44.3	89	52-113
131-11-3	Dimethyl phthalate	50	42.7	85	38-112
117-81-7	bis(2-Ethylhexyl)phthalate	50	46.5	93	56-131
206-44-0	Fluoranthene	50	49.6	99	62-116
86-73-7	Fluorene	50	37.6	75	47-99
118-74-1	Hexachlorobenzene	50	44.4	89	62-102
87-68-3	Hexachlorobutadiene	50	29.0	58	37-91
77-47-4	Hexachlorocyclopentadiene	50	30.5	61	23-102
67-72-1	Hexachloroethane	50	29.4	59	33-86
193-39-5	Indeno(1,2,3-cd)pyrene	50	52.7	105	52-126
78-59-1	Isophorone	50	34.9	70	42-105
91-57-6	2-Methylnaphthalene	50	38.1	76	36-91
88-74-4	2-Nitroaniline	50	41.6	83	49-109
99-09-2	3-Nitroaniline	50	42.9	86	46-139
100-01-6	4-Nitroaniline	50	40.7	81	73-174
91-20-3	Naphthalene	50	30.6	61	37-89
98-95-3	Nitrobenzene	50	48.2	96	42-97
621-64-7	N-Nitroso-di-n-propylamine	50	40.6	81	42-102
86-30-6	N-Nitrosodiphenylamine	50	35.2	70	64-119
85-01-8	Phenanthrene	50	42.3	85	59-103
129-00-0	Pyrene	50	40.0	80	58-110
120-82-1	1,2,4-Trichlorobenzene	50	26.0	52	37-88

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	45%	10-66%
4165-62-2	Phenol-d5	38%	10-53%

Blank Spike Summary

Job Number: T55856
Account: RFWTXHO Weston Solutions
Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP15317-BS	P11910.D	1	07/08/10	GJ	07/08/10	OP15317	EP561

The QC reported here applies to the following samples: Method: SW846 8270C

T55856-2

CAS No.	Surrogate Recoveries	BSP	Limits
118-79-6	2,4,6-Tribromophenol	82%	32-128%
4165-60-0	Nitrobenzene-d5	71%	29-115%
321-60-8	2-Fluorobiphenyl	70%	34-113%
1718-51-0	Terphenyl-d14	88%	12-145%

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 3

Job Number: T55856

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP15317-MS	P11917.D	1	07/08/10	GJ	07/08/10	OP15317	EP561
OP15317-MSD	P11920.D	1	07/08/10	GJ	07/08/10	OP15317	EP561
T55804-1	P11919.D	1	07/08/10	GJ	07/08/10	OP15317	EP561

The QC reported here applies to the following samples:

Method: SW846 8270C

T55856-2

CAS No.	Compound	T55804-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic Acid	10 U		50	25.0	50	24.9	50	0	10-68/27
95-57-8	2-Chlorophenol	5.0 U		50	41.0	82	41.1	82	0	39-93/28
59-50-7	4-Chloro-3-methyl phenol	5.0 U		50	44.1	88	43.3	87	2	43-109/28
120-83-2	2,4-Dichlorophenol	5.0 U		50	43.6	87	43.4	87	0	42-106/25
105-67-9	2,4-Dimethylphenol	5.0 U		50	41.4	83	41.7	83	1	27-87/26
51-28-5	2,4-Dinitrophenol	25 U		50	50.6	101	45.5	91	11	43-107/44
534-52-1	4,6-Dinitro-o-cresol	10 U		50	46.0	92	45.8	92	0	47-112/24
95-48-7	2-Methylphenol	5.0 U		50	35.5	71	35.3	71	1	25-84/31
	3&4-Methylphenol	5.0 U		100	64.2	64	64.3	64	0	25-77/25
88-75-5	2-Nitrophenol	5.0 U		50	43.3	87	43.2	86	0	38-96/26
100-02-7	4-Nitrophenol	25 U		50	15.7	31	15.3	31	3	13-70/25
87-86-5	Pentachlorophenol	25 U		50	44.1	88	43.8	88	1	46-153/18
108-95-2	Phenol	5.0 U		50	22.2	44	22.1	44	0	10-53/35
95-95-4	2,4,5-Trichlorophenol	5.0 U		50	47.4	95	47.6	95	0	40-101/22
88-06-2	2,4,6-Trichlorophenol	5.0 U		50	44.1	88	44.7	89	1	41-102/22
83-32-9	Acenaphthene	5.0 U		50	39.9	80	40.0	80	0	41-110/21
208-96-8	Acenaphthylene	5.0 U		50	40.9	82	41.6	83	2	49-113/23
120-12-7	Anthracene	5.0 U		50	42.6	85	42.7	85	0	59-105/18
56-55-3	Benzo(a)anthracene	5.0 U		50	42.6	85	42.2	84	1	64-112/20
50-32-8	Benzo(a)pyrene	5.0 U		50	37.7	75	41.1	82	9	62-116/23
205-99-2	Benzo(b)fluoranthene	5.0 U		50	44.5	89	42.2	84	5	62-114/22
191-24-2	Benzo(g,h,i)perylene	5.0 U		50	48.4	97	50.5	101	4	55-124/36
207-08-9	Benzo(k)fluoranthene	5.0 U		50	46.0	92	47.5	95	3	62-119/30
101-55-3	4-Bromophenyl phenyl ether	5.0 U		50	41.1	82	41.5	83	1	56-99/20
85-68-7	Butyl benzyl phthalate	5.0 U		50	40.3	81	40.3	81	0	52-125/25
100-51-6	Benzyl Alcohol	5.0 U		50	36.6	73	36.2	72	1	28-83/32
91-58-7	2-Chloronaphthalene	5.0 U		50	40.1	80	40.9	82	2	42-97/27
106-47-8	4-Chloroaniline	5.0 U		50	41.2	82	41.2	82	0	37-128/29
86-74-8	Carbazole	5.0 U		50	44.0	88	43.5	87	1	59-142/19
218-01-9	Chrysene	5.0 U		50	43.8	88	44.3	89	1	67-112/19
111-91-1	bis(2-Chloroethoxy)methane	5.0 U		50	41.5	83	42.0	84	1	38-96/30
111-44-4	bis(2-Chloroethyl)ether	5.0 U		50	47.7	95*	47.7	95*	0	37-91/33
108-60-1	bis(2-Chloroisopropyl)ether	5.0 U		50	39.2	78	39.0	78	1	36-102/32
7005-72-3	4-Chlorophenyl phenyl ether	5.0 U		50	44.8	90	44.6	89	0	48-101/21
95-50-1	1,2-Dichlorobenzene	5.0 U		50	37.5	75	37.4	75	0	33-86/29
541-73-1	1,3-Dichlorobenzene	5.0 U		50	32.4	65	32.4	65	0	32-88/32

Matrix Spike/Matrix Spike Duplicate Summary

Page 2 of 3

Job Number: T55856
Account: RFWTXHO Weston Solutions
Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP15317-MS	P11917.D	1	07/08/10	GJ	07/08/10	OP15317	EP561
OP15317-MSD	P11920.D	1	07/08/10	GJ	07/08/10	OP15317	EP561
T55804-1	P11919.D	1	07/08/10	GJ	07/08/10	OP15317	EP561

The QC reported here applies to the following samples:

Method: SW846 8270C

T55856-2

CAS No.	Compound	T55804-1 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
106-46-7	1,4-Dichlorobenzene	5.0 U	50	36.9	74	37.3	75	1	31-86/36
121-14-2	2,4-Dinitrotoluene	5.0 U	50	47.7	95	47.4	95	1	55-112/23
606-20-2	2,6-Dinitrotoluene	5.0 U	50	42.9	86	42.4	85	1	57-105/23
91-94-1	3,3'-Dichlorobenzidine	10 U	50	21.2	42*	21.1	42*	0	50-142/21
53-70-3	Dibenzo(a,h)anthracene	5.0 U	50	50.3	101	51.4	103	2	55-123/37
132-64-9	Dibenzofuran	5.0 U	50	43.2	86	43.0	86	0	45-99/20
84-74-2	Di-n-butyl phthalate	5.0 U	50	44.1	88	44.0	88	0	64-114/16
117-84-0	Di-n-octyl phthalate	5.0 U	50	44.4	89	43.5	87	2	55-118/25
84-66-2	Diethyl phthalate	5.0 U	50	43.0	86	43.8	88	2	52-113/20
131-11-3	Dimethyl phthalate	5.0 U	50	44.8	90	44.8	90	0	38-112/19
117-81-7	bis(2-Ethylhexyl)phthalate	5.0 U	50	43.4	87	43.8	88	1	56-131/19
206-44-0	Fluoranthene	5.0 U	50	48.4	97	47.4	95	2	62-116/24
86-73-7	Fluorene	5.0 U	50	42.5	85	42.8	86	1	47-99/22
118-74-1	Hexachlorobenzene	5.0 U	50	44.3	89	44.8	90	1	62-102/21
87-68-3	Hexachlorobutadiene	5.0 U	50	40.4	81	40.5	81	0	37-91/28
77-47-4	Hexachlorocyclopentadiene	10 U	50	46.0	92	42.6	85	8	23-102/34
67-72-1	Hexachloroethane	5.0 U	50	43.1	86	43.6	87*	1	33-86/30
193-39-5	Indeno(1,2,3-cd)pyrene	5.0 U	50	50.2	100	50.7	101	1	52-126/30
78-59-1	Isophorone	5.0 U	50	42.9	86	42.1	84	2	42-105/28
91-57-6	2-Methylnaphthalene	5.0 U	50	50.2	100*	50.6	101*	1	36-91/29
88-74-4	2-Nitroaniline	5.0 U	50	45.9	92	45.4	91	1	49-109/22
99-09-2	3-Nitroaniline	5.0 U	50	41.2	82	41.4	83	0	46-139/23
100-01-6	4-Nitroaniline	5.0 U	50	42.3	85	40.5	81	4	73-174/24
91-20-3	Naphthalene	5.0 U	50	42.3	85	42.8	86	1	37-89/24
98-95-3	Nitrobenzene	5.0 U	50	58.8	118*	59.3	119*	1	42-97/26
621-64-7	N-Nitroso-di-n-propylamine	5.0 U	50	49.0	98	48.7	97	1	42-102/27
86-30-6	N-Nitrosodiphenylamine	5.0 U	50	32.4	65	33.0	66	2	64-119/27
85-01-8	Phenanthrene	5.0 U	50	41.6	83	41.9	84	1	59-103/19
129-00-0	Pyrene	5.0 U	50	37.5	75	37.0	74	1	58-110/25
120-82-1	1,2,4-Trichlorobenzene	5.0 U	50	36.2	72	36.5	73	1	37-88/23

CAS No.	Surrogate Recoveries	MS	MSD	T55804-1	Limits
367-12-4	2-Fluorophenol	65%	65%	47%	10-66%
4165-62-2	Phenol-d5	56%*	56%*	39%	10-53%

Matrix Spike/Matrix Spike Duplicate Summary

Page 3 of 3

Job Number: T55856

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP15317-MS	P11917.D	1	07/08/10	GJ	07/08/10	OP15317	EP561
OP15317-MSD	P11920.D	1	07/08/10	GJ	07/08/10	OP15317	EP561
T55804-1	P11919.D	1	07/08/10	GJ	07/08/10	OP15317	EP561

The QC reported here applies to the following samples:

Method: SW846 8270C

T55856-2

CAS No.	Surrogate Recoveries	MS	MSD	T55804-1	Limits
118-79-6	2,4,6-Tribromophenol	93%	93%	80%	32-128%
4165-60-0	Nitrobenzene-d5	91%	92%	77%	29-115%
321-60-8	2-Fluorobiphenyl	92%	93%	78%	34-113%
1718-51-0	Terphenyl-d14	84%	83%	73%	12-145%

6.3.1

6



Metals Analysis

QC Data Summaries

7

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: T55856
Account: RFWTXHO - Weston Solutions
Project: US Oil Recovery/400 North Richey, Pasadena, TX

QC Batch ID: MP12235
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date: 07/08/10

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	8.3	12	-4.5	<200
Antimony	5.0	1	1	0.39	<5.0
Arsenic	5.0	1.7	1	0.0	<5.0
Barium	200	.97	3.4	-0.17	<200
Beryllium	5.0	.056	.16	0.0	<5.0
Boron	100	1.4	7.8		
Cadmium	4.0	.11	.09	-0.040	<4.0
Calcium	5000	7.4	25	0.11	<5000
Chromium	10	.23	.27	0.17	<10
Cobalt	50	.15	.22	-0.11	<50
Copper	25	1.1	5.9	0.040	<25
Iron	100	1.1	23	-0.29	<100
Lead	3.0	1	1.8	0.13	<3.0
Lithium	300	2	2		
Magnesium	5000	7.7	7.9	-10	<5000
Manganese	15	.054	1.9	0.46	<15
Molybdenum	10	.39	.2		
Nickel	40	.69	1.4	-0.14	<40
Potassium	5000	39	45	58.7	<5000
Selenium	5.0	1.5	.98	0.010	<5.0
Silver	10	1.2	.24	-0.090	<10
Sodium	5000	9.2	100	127	<5000
Strontium	10	.061	.4		
Thallium	10	.67	1.2	-0.12	<10
Tin	20	.69	2.8		
Titanium	20	.29	.3		
Vanadium	50	.3	.3	-0.15	<50
Zinc	20	.51	3.5	1.1	<20

Associated samples MP12235: T55856-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: T55856
Account: RFWTXHO - Weston Solutions
Project: US Oil Recovery/400 North Richey, Pasadena, TX

QC Batch ID: MP12235
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date:

07/08/10

07/08/10

Metal	T55804-1 Original	DUP	RPD	QC Limits	T55804-1 Original MS	Spikelot MPTW4	% Rec	QC Limits	
Aluminum	538	597	10.4	0-20	538	54800	50000	108.5	80-120
Antimony	0.0	0.0	NC	0-20	0.0	424	400	106.0	80-120
Arsenic	3.2	1.7	61.2 (a)	0-20	3.2	446	400	110.7	80-120
Barium	78.4	77.8	0.8	0-20	78.4	499	400	105.2	80-120
Beryllium	0.060	0.0	200.0 (a)	0-20	0.060	440	400	110.0	80-120
Boron									
Cadmium	0.0	0.16	200.0 (a)	0-20	0.0	447	400	111.8	80-120
Calcium	140000	137000	2.2	0-20	140000	183000	50000	86.0	80-120
Chromium	1.1	1.1	0.0	0-20	1.1	412	400	102.7	80-120
Cobalt	0.31	0.25	21.4 (a)	0-20	0.31	380	400	94.9	80-120
Copper	3.0	2.8	6.9	0-20	3.0	427	400	106.0	80-120
Iron	742	739	0.4	0-20	742	50400	50000	99.3	80-120
Lead	6.5	5.6	14.9	0-20	6.5	412	400	101.4	80-120
Lithium									
Magnesium	394000	387000	1.8	0-20	394000	428000	50000	68.0 (b)	80-120
Manganese	167	163	2.4	0-20	167	572	400	101.3	80-120
Molybdenum									
Nickel	0.0	0.0	NC	0-20	0.0	414	400	103.5	80-120
Potassium	134000	132000	1.5	0-20	134000	183000	50000	98.0	80-120
Selenium	0.0	0.0	NC	0-20	0.0	446	400	111.5	80-120
Silver	0.0	0.0	NC	0-20	0.0	463	400	115.8	80-120
Sodium	3040000	2990000	1.7	0-20	3040000	289000	50000	-5502.0b	80-120
Strontium									
Thallium	0.0	0.0	NC	0-20	0.0	381	400	95.3	80-120
Tin									
Titanium									
Vanadium	2.9	2.7	7.1	0-20	2.9	406	400	100.8	80-120
Zinc	0.0	0.0	NC	0-20	0.0	455	400	113.8	80-120

Associated samples MP12235: T55856-2

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

(a) RPD acceptable due to low duplicate and sample concentrations.

(b) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: T55856
 Account: RFWTXHO - Weston Solutions
 Project: US Oil Recovery/400 North Richey, Pasadena, TX

QC Batch ID: MP12235
 Matrix Type: AQUEOUS

Methods: SW846 6010B
 Units: ug/l

Prep Date: 07/08/10

Metal	T55804-1 Original	MSD	SpikeLot MPTW4	% Rec	MSD RPD	QC Limit
Aluminum	538	55700	50000	110.3	1.6	20
Antimony	0.0	433	400	108.3	2.1	20
Arsenic	3.2	454	400	112.7	1.8	20
Barium	78.4	505	400	106.7	1.2	20
Beryllium	0.060	445	400	111.2	1.1	20
Boron						
Cadmium	0.0	453	400	113.3	1.3	20
Calcium	140000	183000	50000	86.0	0.0	20
Chromium	1.1	417	400	104.0	1.2	20
Cobalt	0.31	386	400	96.4	1.6	20
Copper	3.0	433	400	107.5	1.4	20
Iron	742	51000	50000	100.5	1.2	20
Lead	6.5	418	400	102.9	1.4	20
Lithium						
Magnesium	394000	428000	50000	68.0 (a)	0.0	20
Manganese	167	574	400	101.8	0.3	20
Molybdenum						
Nickel	0.0	418	400	104.5	1.0	20
Potassium	134000	184000	50000	100.0	0.5	20
Selenium	0.0	456	400	114.0	2.2	20
Silver	0.0	470	400	117.5	1.5	20
Sodium	3040000	295000	50000	-5490.0a	2.1	20
Strontium						
Thallium	0.0	384	400	96.0	0.8	20
Tin						
Titanium						
Vanadium	2.9	409	400	101.5	0.7	20
Zinc	0.0	458	400	114.5	0.7	20

Associated samples MP12235: T55856-2

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

7.1.2
7

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: T55856

Account: RFWTXHO - Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

QC Batch ID: MP12235

Methods: SW846 6010B

Matrix Type: AQUEOUS

Units: ug/l

Prep Date:

07/08/10

Metal	BSP Result	Spikelot MPTW4	% Rec	QC Limits
Aluminum	54800	50000	109.6	80-120
Antimony	419	400	104.8	80-120
Arsenic	419	400	104.8	80-120
Barium	437	400	109.3	80-120
Beryllium	436	400	109.0	80-120
Boron				
Cadmium	428	400	107.0	80-120
Calcium	52700	50000	105.4	80-120
Chromium	431	400	107.8	80-120
Cobalt	419	400	104.8	80-120
Copper	428	400	107.0	80-120
Iron	52600	50000	105.2	80-120
Lead	413	400	103.3	80-120
Lithium				
Magnesium	53100	50000	106.2	80-120
Manganese	432	400	108.0	80-120
Molybdenum				
Nickel	412	400	103.0	80-120
Potassium	52200	50000	104.4	80-120
Selenium	427	400	106.8	80-120
Silver	411	400	102.8	80-120
Sodium				
Strontium				
Thallium	417	400	104.3	80-120
Tin				
Titanium				
Vanadium	414	400	103.5	80-120
Zinc	436	400	109.0	80-120

Associated samples MP12235: T55856-2

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(anr) Analyte not requested

7.1.3

7

SERIAL DILUTION RESULTS SUMMARY

Login Number: T55856
 Account: RFWTXHO - Weston Solutions
 Project: US Oil Recovery/400 North Richey, Pasadena, TX

QC Batch ID: MP12235
 Matrix Type: AQUEOUS

Methods: SW846 6010B
 Units: ug/l

Prep Date: 07/08/10

Metal	T55804-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum	538	550	2.2	0-10
Antimony	0.00	0.00	NC	0-10
Arsenic	3.20	0.00	100.0 (a)	0-10
Barium	78.4	78.6	0.3	0-10
Beryllium	0.0600	0.00	100.0 (a)	0-10
Boron				
Cadmium	0.00	0.00	NC	0-10
Calcium	140000	142000	1.6	0-10
Chromium	1.10	0.00	100.0 (a)	0-10
Cobalt	0.310	0.00	100.0 (a)	0-10
Copper	2.98	6.83	129.2 (a)	0-10
Iron	742	769	3.6	0-10
Lead	6.47	0.00	100.0 (a)	0-10
Lithium				
Magnesium	394000	391000	0.7	0-10
Manganese	167	170	2.0	0-10
Molybdenum				
Nickel	0.00	0.00	NC	0-10
Potassium	134000	127000	4.8	0-10
Selenium	0.00	0.00	NC	0-10
Silver	0.00	0.00	NC	0-10
Sodium	3040000	3030000	0.2	0-10
Strontium				
Thallium	0.00	0.00	NC	0-10
Tin				
Titanium				
Vanadium	2.87	2.19	23.7 (a)	0-10
Zinc	0.00	0.00	NC	0-10

Associated samples MP12235: T55856-2

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(anr) Analyte not requested

(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

7.1.4
7

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: T55856
Account: RFWTXHO - Weston Solutions
Project: US Oil Recovery/400 North Richey, Pasadena, TX

QC Batch ID: MP12245
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 07/09/10

Metal	RL	IDL	MDL	MB raw	final
Mercury	0.20	.049	.094	0.038	<0.20

Associated samples MP12245: T55856-2

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(anr) Analyte not requested

7.2.1

7

Login Number: T55856
Account: RFWTXHO - Weston Solutions
Project: US Oil Recovery/400 North Richey, Pasadena, TX

Methods: SW846 7470A
Units: ug/l

07/09/10

07/09/10

Metal	T55903-1 Original DUP		RPD	QC Limits	T55903-1 Original MS		Spikelot HGTXAQ40 % Rec		QC Limits
Mercury	0.0	0.0	NC	0-6.6	0.0	3.1	3	103.3	78-118

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

Login Number: T55856
Account: RFWTXHO - Weston Solutions
Project: US Oil Recovery/400 North Richey, Pasadena, TX

Methods: SW846 7470A
Units: ug/l

07/09/10

Mercury	0.0	3.0	3	100.0	3.3
---------	-----	-----	---	-------	-----

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: T55856
 Account: RFWTXHO - Weston Solutions
 Project: US Oil Recovery/400 North Richey, Pasadena, TX

QC Batch ID: MP12245 Methods: SW846 7470A
 Matrix Type: AQUEOUS Units: ug/l

Prep Date: 07/09/10

Metal	BSP Result	Spikelot HGTXAQ40	% Rec	QC Limits
Mercury	3.1	3	103.3	80-120

Associated samples MP12245: T55856-2

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested

7.2.3
7



08/17/10

Technical Report for

Weston Solutions

US Oil Recovery/400 North Richey, Pasadena, TX

Accutest Job Number: T56085

Sampling Date: 07/12/10

Report to:

Weston Solutions

kettlerk@westonsolutions.com

ATTN: Kristie Kettler

Total number of pages in report: 98



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Paul Canevaro
Laboratory Director

Client Service contact: Sylvia Garza 713-271-4700

Certifications: TX (T104704220-09C-TX) AR (88-0756) FL (E87628) KS (E-10366) LA (85695/04004)
OK (9103) UT(7132714700)

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Test results relate only to samples analyzed.

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Sample Summary

Weston Solutions

Job No: T56085

US Oil Recovery/400 North Richey, Pasadena, TX

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
T56085-1	07/12/10	08:50	07/12/10	AQ	Water	MCC-WW03-11-100712
T56085-2	07/12/10	09:05	07/12/10	AQ	Water	MCC-WW04-11-100712
T56085-3	07/12/10	09:30	07/12/10	AQ	Water	MCC-WW05-11-100712
T56085-4	07/12/10	09:55	07/12/10	AQ	Water	MCC-WW06-11-100712
T56085-5	07/12/10	10:20	07/12/10	AQ	Water	MCC-WW07-12-100712
T56085-6	07/12/10	14:00	07/12/10	AQ	Water	MCC-WW08-11-100712
T56085-7	07/12/10	14:25	07/12/10	AQ	Water	MCC-WW09-11-100712
T56085-8	07/12/10	14:40	07/12/10	AQ	Water	MCC-WW10-11-100712

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Weston Solutions

Job No T56085

Site: US Oil Recovery/400 North Richey, Pasadena, TX

Report Date 7/15/2010 9:13:53 AM

8 Sample(s) were collected on 07/12/2010 and were received at Accutest on 07/12/2010 properly preserved, at 1.6 Deg. C and intact. These Samples received an Accutest job number of T56085. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix AQ	Batch ID: VF3924
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- Sample(s) T55556-15MS, T55556-15MSD were used as the QC samples indicated.
- Sample(s) T56085-5, T56085-8 have compound(s) reported with a "B" qualifier, indicating analyte is found in the associated method blank.
- Matrix Spike Recovery(s) for cis-1,2-Dichloroethylene are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Matrix AQ	Batch ID: VX628
------------------	------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) T56085-7MS, T56085-7MSD were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Ethylbenzene are outside control limits. Probable cause due to matrix interference.
- Matrix Spike Duplicate Recovery(s) for Acetone, Ethylbenzene are outside control limits. Probable cause due to matrix interference.

Matrix AQ	Batch ID: VZ2939
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- Sample(s) T55754-4MS, T55754-4MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Matrix Spike Recovery(s) for Bromodichloromethane, cis-1,2-Dichloroethylene are outside control limits. Probable cause due to matrix interference.
- Matrix Spike Duplicate Recovery(s) for Bromodichloromethane, cis-1,2-Dichloroethylene, cis-1,3-Dichloropropene are outside control limits. Probable cause due to matrix interference.

Extractables by GCMS By Method SW846 8270C

Matrix AQ	Batch ID: OP15356
------------------	--------------------------

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) T56088-1MS, T56088-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Matrix Spike Recovery(s) for 3,3'-Dichlorobenzidine, 4-Nitroaniline are outside control limits. Probable cause due to matrix interference.
- Matrix Spike Duplicate Recovery(s) for 4-Nitroaniline are outside control limits. Probable cause due to matrix interference.
- Sample(s) T56085-6 have surrogates outside control limits. Probable cause due to matrix interference.
- T56085-6 and -7: Elevated reporting limits and internal standards are not within advisory limits due to matrix interference, final volume of 5 ml.

Metals By Method SW846 6010B

Matrix AQ	Batch ID: MP12270
------------------	--------------------------

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) T56085-1DUP, T56085-1MS, T56085-1MSD, T56085-1SDL, T56085-1DUP were used as the QC samples for metals.
- Matrix Spike Recovery(s) for Selenium are outside control limits. Spike recovery indicates possible matrix interference.
- Matrix Spike Duplicate Recovery(s) for Selenium are outside control limits. Probable cause due to matrix interference.
- Matrix Spike Recovery(s) for Sodium are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- RPD(s) for Duplicate for Selenium are outside control limits for sample MP12270-D1. RPD acceptable due to low duplicate and sample concentrations.
- RPD(s) for Serial Dilution for Antimony, Arsenic, Barium, Cobalt, Copper, Lead, Vanadium, Iron, Potassium, Zinc are outside control limits for sample MP12270-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

Metals By Method SW846 7470A

Matrix AQ	Batch ID: MP12275
------------------	--------------------------

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) T56085-1MS, T56085-1MSD, T56085-1DUP were used as the QC samples for metals.
- RPD(s) for Duplicate for Mercury are outside control limits for sample MP12275-D1. RPD acceptable due to low duplicate and sample concentrations.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used



Sample Results

Report of Analysis

Report of Analysis

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3.1
3**Client Sample ID:** MCC-WW03-11-100712**Lab Sample ID:** T56085-1**Date Sampled:** 07/12/10**Matrix:** AQ - Water**Date Received:** 07/12/10**Method:** SW846 8260B**Percent Solids:** n/a**Project:** US Oil Recovery/400 North Richey, Pasadena, TX

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z010518.D	1	07/13/10	NM	n/a	n/a	VZ2939
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
67-64-1	Acetone	777	50	4.7	ug/l	
71-43-2	Benzene	0.50 U	2.0	0.50	ug/l	
75-27-4	Bromodichloromethane	0.49 U	2.0	0.49	ug/l	
75-25-2	Bromoform	1.4 U	2.0	1.4	ug/l	
108-90-7	Chlorobenzene	0.56 U	2.0	0.56	ug/l	
75-00-3	Chloroethane	0.92 U	2.0	0.92	ug/l	
67-66-3	Chloroform	0.64 U	2.0	0.64	ug/l	
75-15-0	Carbon disulfide	17.6	2.0	0.53	ug/l	
56-23-5	Carbon tetrachloride	0.66 U	2.0	0.66	ug/l	
75-34-3	1,1-Dichloroethane	0.52 U	2.0	0.52	ug/l	
75-35-4	1,1-Dichloroethylene	0.50 U	2.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	0.62 U	2.0	0.62	ug/l	
78-87-5	1,2-Dichloropropane	0.62 U	2.0	0.62	ug/l	
124-48-1	Dibromochloromethane	0.61 U	2.0	0.61	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.56 U	2.0	0.56	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.48 U	2.0	0.48	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.45 U	2.0	0.45	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.68 U	2.0	0.68	ug/l	
100-41-4	Ethylbenzene	0.98	2.0	0.55	ug/l	J
591-78-6	2-Hexanone	3.2 U	10	3.2	ug/l	
108-10-1	4-Methyl-2-pentanone	50.9	10	9.9	ug/l	
74-83-9	Methyl bromide	0.94 U	2.0	0.94	ug/l	
74-87-3	Methyl chloride	0.84 U	2.0	0.84	ug/l	
75-09-2	Methylene chloride	0.41 U	5.0	0.41	ug/l	
78-93-3	Methyl ethyl ketone	186	10	3.9	ug/l	
100-42-5	Styrene	0.56 U	2.0	0.56	ug/l	
71-55-6	1,1,1-Trichloroethane	0.62 U	2.0	0.62	ug/l	
79-34-5	1,1,1,2-Tetrachloroethane	1.2 U	2.0	1.2	ug/l	
79-00-5	1,1,2-Trichloroethane	0.98 U	2.0	0.98	ug/l	
127-18-4	Tetrachloroethylene	0.91 U	2.0	0.91	ug/l	
108-88-3	Toluene	4.2	2.0	0.43	ug/l	
79-01-6	Trichloroethylene	0.52 U	2.0	0.52	ug/l	

U = Not detected SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 2 of 2

3.1
3

Client Sample ID:	MCC-WW03-11-100712	Date Sampled:	07/12/10
Lab Sample ID:	T56085-1	Date Received:	07/12/10
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	US Oil Recovery/400 North Richey, Pasadena, TX		

VOA TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
75-01-4	Vinyl chloride	1.0 U	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	2.3	6.0	1.7	ug/l	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	111%		79-122%
17060-07-0	1,2-Dichloroethane-D4	110%		75-121%
2037-26-5	Toluene-D8	103%		87-119%
460-00-4	4-Bromofluorobenzene	97%		80-133%

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 3

3.1
3**Client Sample ID:** MCC-WW03-11-100712**Lab Sample ID:** T56085-1**Date Sampled:** 07/12/10**Matrix:** AQ - Water**Date Received:** 07/12/10**Method:** SW846 8270C SW846 3510C**Percent Solids:** n/a**Project:** US Oil Recovery/400 North Richey, Pasadena, TX

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	P12033.D	1	07/13/10	GJ	07/13/10	OP15356	EP567
Run #2							

	Initial Volume	Final Volume
Run #1	860 ml	5.0 ml
Run #2		

ABN TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
65-85-0	Benzoic Acid	586	58	29	ug/l	
95-57-8	2-Chlorophenol	7.0 U	29	7.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	6.7 U	29	6.7	ug/l	
120-83-2	2,4-Dichlorophenol	13 U	29	13	ug/l	
105-67-9	2,4-Dimethylphenol	7.4 U	29	7.4	ug/l	
51-28-5	2,4-Dinitrophenol	88 U	150	88	ug/l	
534-52-1	4,6-Dinitro-o-cresol	8.0 U	58	8.0	ug/l	
95-48-7	2-Methylphenol	61.8	29	4.8	ug/l	
	3&4-Methylphenol	519	29	9.2	ug/l	
88-75-5	2-Nitrophenol	12 U	29	12	ug/l	
100-02-7	4-Nitrophenol	39 U	150	39	ug/l	
87-86-5	Pentachlorophenol	77 U	150	77	ug/l	
108-95-2	Phenol	499	29	4.4	ug/l	
95-95-4	2,4,5-Trichlorophenol	6.7 U	29	6.7	ug/l	
88-06-2	2,4,6-Trichlorophenol	6.6 U	29	6.6	ug/l	
83-32-9	Acenaphthene	9.1 U	29	9.1	ug/l	
208-96-8	Acenaphthylene	7.0 U	29	7.0	ug/l	
120-12-7	Anthracene	6.4 U	29	6.4	ug/l	
56-55-3	Benzo(a)anthracene	6.3 U	29	6.3	ug/l	
50-32-8	Benzo(a)pyrene	6.3 U	29	6.3	ug/l	
205-99-2	Benzo(b)fluoranthene	5.0 U	29	5.0	ug/l	
191-24-2	Benzo(g,h,i)perylene	9.7 U	29	9.7	ug/l	
207-08-9	Benzo(k)fluoranthene	6.2 U	29	6.2	ug/l	
101-55-3	4-Bromophenyl phenyl ether	8.0 U	29	8.0	ug/l	
85-68-7	Butyl benzyl phthalate	9.5 U	29	9.5	ug/l	
100-51-6	Benzyl Alcohol	7.6 U	29	7.6	ug/l	
91-58-7	2-Chloronaphthalene	8.1 U	29	8.1	ug/l	
106-47-8	4-Chloroaniline	25 U	29	25	ug/l	
86-74-8	Carbazole	8.7 U	29	8.7	ug/l	
218-01-9	Chrysene	5.7 U	29	5.7	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	7.5 U	29	7.5	ug/l	
111-44-4	bis(2-Chloroethyl)ether	7.6 U	29	7.6	ug/l	

U = Not detected SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MCC-WW03-11-100712	Date Sampled:	07/12/10
Lab Sample ID:	T56085-1	Date Received:	07/12/10
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	US Oil Recovery/400 North Richey, Pasadena, TX		

ABN TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
108-60-1	bis(2-Chloroisopropyl)ether	12 U	29	12	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	7.6 U	29	7.6	ug/l	
95-50-1	1,2-Dichlorobenzene	7.3 U	29	7.3	ug/l	
541-73-1	1,3-Dichlorobenzene	7.3 U	29	7.3	ug/l	
106-46-7	1,4-Dichlorobenzene	7.5 U	29	7.5	ug/l	
121-14-2	2,4-Dinitrotoluene	8.3 U	29	8.3	ug/l	
606-20-2	2,6-Dinitrotoluene	7.7 U	29	7.7	ug/l	
91-94-1	3,3'-Dichlorobenzidine	19 U	58	19	ug/l	
53-70-3	Dibenzo(a,h)anthracene	9.0 U	29	9.0	ug/l	
132-64-9	Dibenzofuran	7.7 U	29	7.7	ug/l	
84-74-2	Di-n-butyl phthalate	5.9 U	29	5.9	ug/l	
117-84-0	Di-n-octyl phthalate	7.6 U	29	7.6	ug/l	
84-66-2	Diethyl phthalate	6.2 U	29	6.2	ug/l	
131-11-3	Dimethyl phthalate	6.1 U	29	6.1	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	10.7	29	10	ug/l	J
206-44-0	Fluoranthene	5.6 U	29	5.6	ug/l	
86-73-7	Fluorene	7.8 U	29	7.8	ug/l	
118-74-1	Hexachlorobenzene	7.8 U	29	7.8	ug/l	
87-68-3	Hexachlorobutadiene	6.4 U	29	6.4	ug/l	
77-47-4	Hexachlorocyclopentadiene	30 U	58	30	ug/l	
67-72-1	Hexachloroethane	5.6 U	29	5.6	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	11 U	29	11	ug/l	
78-59-1	Isophorone	7.0 U	29	7.0	ug/l	
91-57-6	2-Methylnaphthalene	7.4 U	29	7.4	ug/l	
88-74-4	2-Nitroaniline	8.3 U	29	8.3	ug/l	
99-09-2	3-Nitroaniline	19 U	29	19	ug/l	
100-01-6	4-Nitroaniline	14 U	29	14	ug/l	
91-20-3	Naphthalene	6.6 U	29	6.6	ug/l	
98-95-3	Nitrobenzene	10 U	29	10	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	8.3 U	29	8.3	ug/l	
86-30-6	N-Nitrosodiphenylamine	9.7 U	29	9.7	ug/l	
85-01-8	Phenanthrene	5.6 U	29	5.6	ug/l	
129-00-0	Pyrene	9.7 U	29	9.7	ug/l	
120-82-1	1,2,4-Trichlorobenzene	7.4 U	29	7.4	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	43%		10-66%
4165-62-2	Phenol-d5	35%		10-53%
118-79-6	2,4,6-Tribromophenol	103%		32-128%

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Client Sample ID:	MCC-WW03-11-100712	Date Sampled:	07/12/10
Lab Sample ID:	T56085-1	Date Received:	07/12/10
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	US Oil Recovery/400 North Richey, Pasadena, TX		

ABN TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	64%		29-115%
321-60-8	2-Fluorobiphenyl	85%		34-113%
1718-51-0	Terphenyl-d14	89%		12-145%

(a) Elevated reporting limits due to matrix interference, final volume 5 ml.

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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3**Client Sample ID:** MCC-WW03-11-100712**Lab Sample ID:** T56085-1**Date Sampled:** 07/12/10**Matrix:** AQ - Water**Date Received:** 07/12/10**Percent Solids:** n/a**Project:** US Oil Recovery/400 North Richey, Pasadena, TX

Total Metals Analysis

Analyte	Result	MQL	SDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	0.960	0.20	0.012	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Antimony	0.0027 B	0.0050	0.0010	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Arsenic	0.0065	0.0050	0.0010	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Barium	0.0102 B	0.20	0.0034	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Beryllium	0.00016 U	0.0050	0.00016	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Cadmium	0.00010 B	0.0040	0.000090	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Calcium	37.0	5.0	0.025	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Chromium	0.0026 B	0.010	0.00027	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Cobalt	0.0036 B	0.050	0.00022	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Copper	0.0059 U	0.025	0.0059	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Iron	0.391	0.10	0.023	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Lead	0.0049	0.0030	0.0018	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Magnesium	11.0	5.0	0.0079	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Manganese	0.0225	0.015	0.0019	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Mercury	0.000094 U	0.00020	0.000094	mg/l	1	07/13/10	07/13/10 CN	SW846 7470A ¹	SW846 7470A ⁴
Nickel	0.0675	0.040	0.0014	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Potassium	48.6	5.0	0.045	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Selenium	0.0012 B	0.0050	0.00098	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Silver	0.00024 U	0.010	0.00024	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Sodium	672	10	0.21	mg/l	2	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Thallium	0.0012 U	0.010	0.0012	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Vanadium	0.0018 B	0.050	0.00030	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Zinc	0.0550	0.020	0.0035	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³

(1) Instrument QC Batch: MA4909

(2) Instrument QC Batch: MA4911

(3) Prep QC Batch: MP12270

(4) Prep QC Batch: MP12275

MQL = Method Quantitation Limit

SDL = Sample Detection Limit

U = Indicates a result < SDL

B = Indicates a result > = SDL but < MQL

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3**Client Sample ID:** MCC-WW04-11-100712**Lab Sample ID:** T56085-2**Date Sampled:** 07/12/10**Matrix:** AQ - Water**Date Received:** 07/12/10**Method:** SW846 8260B**Percent Solids:** n/a**Project:** US Oil Recovery/400 North Richey, Pasadena, TX

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z010519.D	1	07/13/10	NM	n/a	n/a	VZ2939
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
67-64-1	Acetone	382	50	4.7	ug/l	
71-43-2	Benzene	0.50 U	2.0	0.50	ug/l	
75-27-4	Bromodichloromethane	0.49 U	2.0	0.49	ug/l	
75-25-2	Bromoform	1.4 U	2.0	1.4	ug/l	
108-90-7	Chlorobenzene	0.56 U	2.0	0.56	ug/l	
75-00-3	Chloroethane	0.92 U	2.0	0.92	ug/l	
67-66-3	Chloroform	0.64 U	2.0	0.64	ug/l	
75-15-0	Carbon disulfide	9.1	2.0	0.53	ug/l	
56-23-5	Carbon tetrachloride	0.66 U	2.0	0.66	ug/l	
75-34-3	1,1-Dichloroethane	0.52 U	2.0	0.52	ug/l	
75-35-4	1,1-Dichloroethylene	0.50 U	2.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	0.62 U	2.0	0.62	ug/l	
78-87-5	1,2-Dichloropropane	0.62 U	2.0	0.62	ug/l	
124-48-1	Dibromochloromethane	0.61 U	2.0	0.61	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.56 U	2.0	0.56	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.48 U	2.0	0.48	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.45 U	2.0	0.45	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.68 U	2.0	0.68	ug/l	
100-41-4	Ethylbenzene	0.55 U	2.0	0.55	ug/l	
591-78-6	2-Hexanone	3.2 U	10	3.2	ug/l	
108-10-1	4-Methyl-2-pentanone	60.6	10	9.9	ug/l	
74-83-9	Methyl bromide	0.94 U	2.0	0.94	ug/l	
74-87-3	Methyl chloride	0.84 U	2.0	0.84	ug/l	
75-09-2	Methylene chloride	0.41 U	5.0	0.41	ug/l	
78-93-3	Methyl ethyl ketone	160	10	3.9	ug/l	
100-42-5	Styrene	0.56 U	2.0	0.56	ug/l	
71-55-6	1,1,1-Trichloroethane	0.62 U	2.0	0.62	ug/l	
79-34-5	1,1,1,2-Tetrachloroethane	1.2 U	2.0	1.2	ug/l	
79-00-5	1,1,2-Trichloroethane	0.98 U	2.0	0.98	ug/l	
127-18-4	Tetrachloroethylene	0.91 U	2.0	0.91	ug/l	
108-88-3	Toluene	1.5	2.0	0.43	ug/l	J
79-01-6	Trichloroethylene	0.52 U	2.0	0.52	ug/l	

U = Not detected SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

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Client Sample ID:	MCC-WW04-11-100712	Date Sampled:	07/12/10
Lab Sample ID:	T56085-2	Date Received:	07/12/10
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	US Oil Recovery/400 North Richey, Pasadena, TX		

VOA TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
75-01-4	Vinyl chloride	1.0 U	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	1.7 U	6.0	1.7	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		79-122%
17060-07-0	1,2-Dichloroethane-D4	108%		75-121%
2037-26-5	Toluene-D8	102%		87-119%
460-00-4	4-Bromofluorobenzene	93%		80-133%

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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3**Client Sample ID:** MCC-WW04-11-100712**Lab Sample ID:** T56085-2**Date Sampled:** 07/12/10**Matrix:** AQ - Water**Date Received:** 07/12/10**Method:** SW846 8270C SW846 3510C**Percent Solids:** n/a**Project:** US Oil Recovery/400 North Richey, Pasadena, TX

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	P12032.D	1	07/13/10	GJ	07/13/10	OP15356	EP567
Run #2							

	Initial Volume	Final Volume
Run #1	915 ml	5.0 ml
Run #2		

ABN TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
65-85-0	Benzoic Acid	173	55	27	ug/l	
95-57-8	2-Chlorophenol	6.6 U	27	6.6	ug/l	
59-50-7	4-Chloro-3-methyl phenol	6.3 U	27	6.3	ug/l	
120-83-2	2,4-Dichlorophenol	12 U	27	12	ug/l	
105-67-9	2,4-Dimethylphenol	6.9 U	27	6.9	ug/l	
51-28-5	2,4-Dinitrophenol	83 U	140	83	ug/l	
534-52-1	4,6-Dinitro-o-cresol	7.5 U	55	7.5	ug/l	
95-48-7	2-Methylphenol	23.6	27	4.6	ug/l	J
	3&4-Methylphenol	69.5	27	8.6	ug/l	
88-75-5	2-Nitrophenol	11 U	27	11	ug/l	
100-02-7	4-Nitrophenol	36 U	140	36	ug/l	
87-86-5	Pentachlorophenol	72 U	140	72	ug/l	
108-95-2	Phenol	81.4	27	4.1	ug/l	
95-95-4	2,4,5-Trichlorophenol	6.3 U	27	6.3	ug/l	
88-06-2	2,4,6-Trichlorophenol	6.2 U	27	6.2	ug/l	
83-32-9	Acenaphthene	8.5 U	27	8.5	ug/l	
208-96-8	Acenaphthylene	6.6 U	27	6.6	ug/l	
120-12-7	Anthracene	6.0 U	27	6.0	ug/l	
56-55-3	Benzo(a)anthracene	5.9 U	27	5.9	ug/l	
50-32-8	Benzo(a)pyrene	5.9 U	27	5.9	ug/l	
205-99-2	Benzo(b)fluoranthene	4.7 U	27	4.7	ug/l	
191-24-2	Benzo(g,h,i)perylene	9.1 U	27	9.1	ug/l	
207-08-9	Benzo(k)fluoranthene	5.8 U	27	5.8	ug/l	
101-55-3	4-Bromophenyl phenyl ether	7.5 U	27	7.5	ug/l	
85-68-7	Butyl benzyl phthalate	8.9 U	27	8.9	ug/l	
100-51-6	Benzyl Alcohol	7.1 U	27	7.1	ug/l	
91-58-7	2-Chloronaphthalene	7.6 U	27	7.6	ug/l	
106-47-8	4-Chloroaniline	23 U	27	23	ug/l	
86-74-8	Carbazole	8.1 U	27	8.1	ug/l	
218-01-9	Chrysene	5.4 U	27	5.4	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	7.0 U	27	7.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	7.1 U	27	7.1	ug/l	

U = Not detected SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MCC-WW04-11-100712	Date Sampled:	07/12/10
Lab Sample ID:	T56085-2	Date Received:	07/12/10
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	US Oil Recovery/400 North Richey, Pasadena, TX		

ABN TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
108-60-1	bis(2-Chloroisopropyl)ether	11 U	27	11	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	7.2 U	27	7.2	ug/l	
95-50-1	1,2-Dichlorobenzene	6.8 U	27	6.8	ug/l	
541-73-1	1,3-Dichlorobenzene	6.8 U	27	6.8	ug/l	
106-46-7	1,4-Dichlorobenzene	7.0 U	27	7.0	ug/l	
121-14-2	2,4-Dinitrotoluene	7.8 U	27	7.8	ug/l	
606-20-2	2,6-Dinitrotoluene	7.3 U	27	7.3	ug/l	
91-94-1	3,3'-Dichlorobenzidine	17 U	55	17	ug/l	
53-70-3	Dibenzo(a,h)anthracene	8.5 U	27	8.5	ug/l	
132-64-9	Dibenzofuran	7.3 U	27	7.3	ug/l	
84-74-2	Di-n-butyl phthalate	5.6 U	27	5.6	ug/l	
117-84-0	Di-n-octyl phthalate	7.2 U	27	7.2	ug/l	
84-66-2	Diethyl phthalate	5.8 U	27	5.8	ug/l	
131-11-3	Dimethyl phthalate	5.7 U	27	5.7	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	9.7	27	9.6	ug/l	J
206-44-0	Fluoranthene	5.3 U	27	5.3	ug/l	
86-73-7	Fluorene	7.3 U	27	7.3	ug/l	
118-74-1	Hexachlorobenzene	7.3 U	27	7.3	ug/l	
87-68-3	Hexachlorobutadiene	6.0 U	27	6.0	ug/l	
77-47-4	Hexachlorocyclopentadiene	28 U	55	28	ug/l	
67-72-1	Hexachloroethane	5.3 U	27	5.3	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	9.9 U	27	9.9	ug/l	
78-59-1	Isophorone	6.6 U	27	6.6	ug/l	
91-57-6	2-Methylnaphthalene	7.0 U	27	7.0	ug/l	
88-74-4	2-Nitroaniline	7.8 U	27	7.8	ug/l	
99-09-2	3-Nitroaniline	18 U	27	18	ug/l	
100-01-6	4-Nitroaniline	13 U	27	13	ug/l	
91-20-3	Naphthalene	6.2 U	27	6.2	ug/l	
98-95-3	Nitrobenzene	9.5 U	27	9.5	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	7.8 U	27	7.8	ug/l	
86-30-6	N-Nitrosodiphenylamine	9.1 U	27	9.1	ug/l	
85-01-8	Phenanthrene	5.3 U	27	5.3	ug/l	
129-00-0	Pyrene	9.1 U	27	9.1	ug/l	
120-82-1	1,2,4-Trichlorobenzene	6.9 U	27	6.9	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	30%		10-66%
4165-62-2	Phenol-d5	28%		10-53%
118-79-6	2,4,6-Tribromophenol	75%		32-128%

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Client Sample ID:	MCC-WW04-11-100712	Date Sampled:	07/12/10
Lab Sample ID:	T56085-2	Date Received:	07/12/10
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	US Oil Recovery/400 North Richey, Pasadena, TX		

ABN TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	48%		29-115%
321-60-8	2-Fluorobiphenyl	64%		34-113%
1718-51-0	Terphenyl-d14	64%		12-145%

(a) Elevated reporting limits due to matrix interference, final volume 5 ml.

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

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3**Client Sample ID:** MCC-WW04-11-100712**Lab Sample ID:** T56085-2**Date Sampled:** 07/12/10**Matrix:** AQ - Water**Date Received:** 07/12/10**Percent Solids:** n/a**Project:** US Oil Recovery/400 North Richey, Pasadena, TX

Total Metals Analysis

Analyte	Result	MQL	SDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	1.37	0.20	0.012	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Antimony	0.0053	0.0050	0.0010	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Arsenic	0.0068	0.0050	0.0010	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Barium	0.0090 B	0.20	0.0034	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Beryllium	0.00016 U	0.0050	0.00016	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Cadmium	0.00025 B	0.0040	0.000090	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Calcium	23.9	5.0	0.025	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Chromium	0.0030 B	0.010	0.00027	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Cobalt	0.0058 B	0.050	0.00022	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Copper	0.0059 U	0.025	0.0059	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Iron	0.552	0.10	0.023	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Lead	0.0071	0.0030	0.0018	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Magnesium	14.1	5.0	0.0079	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Manganese	0.0144 B	0.015	0.0019	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Mercury	0.000094 U	0.00020	0.000094	mg/l	1	07/13/10	07/13/10 CN	SW846 7470A ¹	SW846 7470A ⁴
Nickel	0.0903	0.040	0.0014	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Potassium	66.9	5.0	0.045	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Selenium	0.0028 B	0.0050	0.00098	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Silver	0.00024 U	0.010	0.00024	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Sodium	951	25	0.52	mg/l	5	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Thallium	0.0012 U	0.010	0.0012	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Vanadium	0.0023 B	0.050	0.00030	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Zinc	0.0638	0.020	0.0035	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³

(1) Instrument QC Batch: MA4909

(2) Instrument QC Batch: MA4911

(3) Prep QC Batch: MP12270

(4) Prep QC Batch: MP12275

MQL = Method Quantitation Limit

SDL = Sample Detection Limit

U = Indicates a result < SDL

B = Indicates a result > = SDL but < MQL

Report of Analysis

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Client Sample ID:	MCC-WW05-11-100712	Date Sampled:	07/12/10
Lab Sample ID:	T56085-3	Date Received:	07/12/10
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	US Oil Recovery/400 North Richey, Pasadena, TX		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z010520.D	1	07/13/10	NM	n/a	n/a	VZ2939
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
67-64-1	Acetone	137	50	4.7	ug/l	
71-43-2	Benzene	0.50 U	2.0	0.50	ug/l	
75-27-4	Bromodichloromethane	0.49 U	2.0	0.49	ug/l	
75-25-2	Bromoform	1.4 U	2.0	1.4	ug/l	
108-90-7	Chlorobenzene	0.56 U	2.0	0.56	ug/l	
75-00-3	Chloroethane	0.92 U	2.0	0.92	ug/l	
67-66-3	Chloroform	0.64 U	2.0	0.64	ug/l	
75-15-0	Carbon disulfide	8.9	2.0	0.53	ug/l	
56-23-5	Carbon tetrachloride	0.66 U	2.0	0.66	ug/l	
75-34-3	1,1-Dichloroethane	0.52 U	2.0	0.52	ug/l	
75-35-4	1,1-Dichloroethylene	0.50 U	2.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	0.62 U	2.0	0.62	ug/l	
78-87-5	1,2-Dichloropropane	0.62 U	2.0	0.62	ug/l	
124-48-1	Dibromochloromethane	0.61 U	2.0	0.61	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.56 U	2.0	0.56	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.48 U	2.0	0.48	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.45 U	2.0	0.45	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.68 U	2.0	0.68	ug/l	
100-41-4	Ethylbenzene	0.55 U	2.0	0.55	ug/l	
591-78-6	2-Hexanone	3.2 U	10	3.2	ug/l	
108-10-1	4-Methyl-2-pentanone	9.9 U	10	9.9	ug/l	
74-83-9	Methyl bromide	0.94 U	2.0	0.94	ug/l	
74-87-3	Methyl chloride	0.84 U	2.0	0.84	ug/l	
75-09-2	Methylene chloride	0.41 U	5.0	0.41	ug/l	
78-93-3	Methyl ethyl ketone	28.8	10	3.9	ug/l	
100-42-5	Styrene	0.56 U	2.0	0.56	ug/l	
71-55-6	1,1,1-Trichloroethane	0.62 U	2.0	0.62	ug/l	
79-34-5	1,1,1,2-Tetrachloroethane	1.2 U	2.0	1.2	ug/l	
79-00-5	1,1,2-Trichloroethane	0.98 U	2.0	0.98	ug/l	
127-18-4	Tetrachloroethylene	0.91 U	2.0	0.91	ug/l	
108-88-3	Toluene	0.61	2.0	0.43	ug/l	J
79-01-6	Trichloroethylene	0.52 U	2.0	0.52	ug/l	

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	MCC-WW05-11-100712		
Lab Sample ID:	T56085-3	Date Sampled:	07/12/10
Matrix:	AQ - Water	Date Received:	07/12/10
Method:	SW846 8260B	Percent Solids:	n/a
Project:	US Oil Recovery/400 North Richey, Pasadena, TX		

VOA TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
75-01-4	Vinyl chloride	1.0 U	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	2.6	6.0	1.7	ug/l	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		79-122%
17060-07-0	1,2-Dichloroethane-D4	110%		75-121%
2037-26-5	Toluene-D8	102%		87-119%
460-00-4	4-Bromofluorobenzene	91%		80-133%

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

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3**Client Sample ID:** MCC-WW05-11-100712**Lab Sample ID:** T56085-3**Date Sampled:** 07/12/10**Matrix:** AQ - Water**Date Received:** 07/12/10**Method:** SW846 8270C SW846 3510C**Percent Solids:** n/a**Project:** US Oil Recovery/400 North Richey, Pasadena, TX

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	P12031.D	1	07/13/10	GJ	07/13/10	OP15356	EP567
Run #2							

	Initial Volume	Final Volume
Run #1	910 ml	5.0 ml
Run #2		

ABN TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
65-85-0	Benzoic Acid	357	55	27	ug/l	
95-57-8	2-Chlorophenol	6.6 U	27	6.6	ug/l	
59-50-7	4-Chloro-3-methyl phenol	6.4 U	27	6.4	ug/l	
120-83-2	2,4-Dichlorophenol	12 U	27	12	ug/l	
105-67-9	2,4-Dimethylphenol	7.0 U	27	7.0	ug/l	
51-28-5	2,4-Dinitrophenol	83 U	140	83	ug/l	
534-52-1	4,6-Dinitro-o-cresol	7.5 U	55	7.5	ug/l	
95-48-7	2-Methylphenol	11.6	27	4.6	ug/l	J
	3&4-Methylphenol	157	27	8.7	ug/l	
88-75-5	2-Nitrophenol	11 U	27	11	ug/l	
100-02-7	4-Nitrophenol	37 U	140	37	ug/l	
87-86-5	Pentachlorophenol	73 U	140	73	ug/l	
108-95-2	Phenol	25.9	27	4.1	ug/l	J
95-95-4	2,4,5-Trichlorophenol	6.4 U	27	6.4	ug/l	
88-06-2	2,4,6-Trichlorophenol	6.3 U	27	6.3	ug/l	
83-32-9	Acenaphthene	8.6 U	27	8.6	ug/l	
208-96-8	Acenaphthylene	6.6 U	27	6.6	ug/l	
120-12-7	Anthracene	6.0 U	27	6.0	ug/l	
56-55-3	Benzo(a)anthracene	5.9 U	27	5.9	ug/l	
50-32-8	Benzo(a)pyrene	5.9 U	27	5.9	ug/l	
205-99-2	Benzo(b)fluoranthene	4.8 U	27	4.8	ug/l	
191-24-2	Benzo(g,h,i)perylene	9.1 U	27	9.1	ug/l	
207-08-9	Benzo(k)fluoranthene	5.8 U	27	5.8	ug/l	
101-55-3	4-Bromophenyl phenyl ether	7.6 U	27	7.6	ug/l	
85-68-7	Butyl benzyl phthalate	9.0 U	27	9.0	ug/l	
100-51-6	Benzyl Alcohol	7.1 U	27	7.1	ug/l	
91-58-7	2-Chloronaphthalene	7.6 U	27	7.6	ug/l	
106-47-8	4-Chloroaniline	23 U	27	23	ug/l	
86-74-8	Carbazole	8.2 U	27	8.2	ug/l	
218-01-9	Chrysene	5.4 U	27	5.4	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	7.1 U	27	7.1	ug/l	
111-44-4	bis(2-Chloroethyl)ether	7.1 U	27	7.1	ug/l	

U = Not detected SDL - Sample Detection Limit

MQL = Method Quantitation Limit

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J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MCC-WW05-11-100712	Date Sampled:	07/12/10
Lab Sample ID:	T56085-3	Date Received:	07/12/10
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	US Oil Recovery/400 North Richey, Pasadena, TX		

ABN TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
108-60-1	bis(2-Chloroisopropyl)ether	11 U	27	11	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	7.2 U	27	7.2	ug/l	
95-50-1	1,2-Dichlorobenzene	6.9 U	27	6.9	ug/l	
541-73-1	1,3-Dichlorobenzene	6.9 U	27	6.9	ug/l	
106-46-7	1,4-Dichlorobenzene	7.1 U	27	7.1	ug/l	
121-14-2	2,4-Dinitrotoluene	7.9 U	27	7.9	ug/l	
606-20-2	2,6-Dinitrotoluene	7.3 U	27	7.3	ug/l	
91-94-1	3,3'-Dichlorobenzidine	18 U	55	18	ug/l	
53-70-3	Dibenzo(a,h)anthracene	8.5 U	27	8.5	ug/l	
132-64-9	Dibenzofuran	7.3 U	27	7.3	ug/l	
84-74-2	Di-n-butyl phthalate	5.6 U	27	5.6	ug/l	
117-84-0	Di-n-octyl phthalate	7.2 U	27	7.2	ug/l	
84-66-2	Diethyl phthalate	5.9 U	27	5.9	ug/l	
131-11-3	Dimethyl phthalate	5.8 U	27	5.8	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	9.7 U	27	9.7	ug/l	
206-44-0	Fluoranthene	5.3 U	27	5.3	ug/l	
86-73-7	Fluorene	7.4 U	27	7.4	ug/l	
118-74-1	Hexachlorobenzene	7.4 U	27	7.4	ug/l	
87-68-3	Hexachlorobutadiene	6.0 U	27	6.0	ug/l	
77-47-4	Hexachlorocyclopentadiene	28 U	55	28	ug/l	
67-72-1	Hexachloroethane	5.3 U	27	5.3	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	9.9 U	27	9.9	ug/l	
78-59-1	Isophorone	6.6 U	27	6.6	ug/l	
91-57-6	2-Methylnaphthalene	7.0 U	27	7.0	ug/l	
88-74-4	2-Nitroaniline	7.8 U	27	7.8	ug/l	
99-09-2	3-Nitroaniline	18 U	27	18	ug/l	
100-01-6	4-Nitroaniline	13 U	27	13	ug/l	
91-20-3	Naphthalene	6.2 U	27	6.2	ug/l	
98-95-3	Nitrobenzene	9.5 U	27	9.5	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	7.8 U	27	7.8	ug/l	
86-30-6	N-Nitrosodiphenylamine	9.2 U	27	9.2	ug/l	
85-01-8	Phenanthrene	5.3 U	27	5.3	ug/l	
129-00-0	Pyrene	9.1 U	27	9.1	ug/l	
120-82-1	1,2,4-Trichlorobenzene	7.0 U	27	7.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	18%		10-66%
4165-62-2	Phenol-d5	13%		10-53%
118-79-6	2,4,6-Tribromophenol	43%		32-128%

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Client Sample ID:	MCC-WW05-11-100712	Date Sampled:	07/12/10
Lab Sample ID:	T56085-3	Date Received:	07/12/10
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	US Oil Recovery/400 North Richey, Pasadena, TX		

ABN TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	34%		29-115%
321-60-8	2-Fluorobiphenyl	35%		34-113%
1718-51-0	Terphenyl-d14	46%		12-145%

(a) Elevated reporting limits due to matrix interference, final volume 5 ml.

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID: MCC-WW05-11-100712

Lab Sample ID: T56085-3

Date Sampled: 07/12/10

Matrix: AQ - Water

Date Received: 07/12/10

Percent Solids: n/a

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Total Metals Analysis

Analyte	Result	MQL	SDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	0.367	0.20	0.012	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Antimony	0.0010 U	0.0050	0.0010	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Arsenic	0.0094	0.0050	0.0010	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Barium	0.0034 U	0.20	0.0034	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Beryllium	0.00016 U	0.0050	0.00016	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Cadmium	0.000090 U	0.0040	0.000090	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Calcium	11.8	5.0	0.025	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Chromium	0.0079 B	0.010	0.00027	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Cobalt	0.0030 B	0.050	0.00022	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Copper	0.0059 U	0.025	0.0059	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Iron	0.244	0.10	0.023	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Lead	0.0064	0.0030	0.0018	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Magnesium	10.8	5.0	0.0079	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Manganese	0.0195	0.015	0.0019	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Mercury	0.000094 U	0.00020	0.000094	mg/l	1	07/13/10	07/13/10 CN	SW846 7470A ¹	SW846 7470A ⁴
Nickel	0.114	0.040	0.0014	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Potassium	76.7	5.0	0.045	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Selenium	0.0017 B	0.0050	0.00098	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Silver	0.00024 U	0.010	0.00024	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Thallium	0.0012 U	0.010	0.0012	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Vanadium	0.0051 B	0.050	0.00030	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Zinc	0.142	0.020	0.0035	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³

(1) Instrument QC Batch: MA4909

(2) Instrument QC Batch: MA4911

(3) Prep QC Batch: MP12270

(4) Prep QC Batch: MP12275

MQL = Method Quantitation Limit

SDL = Sample Detection Limit

U = Indicates a result < SDL

B = Indicates a result > = SDL but < MQL

Report of Analysis

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3.4
3**Client Sample ID:** MCC-WW06-11-100712**Lab Sample ID:** T56085-4**Date Sampled:** 07/12/10**Matrix:** AQ - Water**Date Received:** 07/12/10**Method:** SW846 8260B**Percent Solids:** n/a**Project:** US Oil Recovery/400 North Richey, Pasadena, TX

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z010521.D	1	07/13/10	NM	n/a	n/a	VZ2939
Run #2							

Purge Volume

Run #1 5.0 ml

Run #2

VOA TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
67-64-1	Acetone	387	50	4.7	ug/l	
71-43-2	Benzene	1.7	2.0	0.50	ug/l	J
75-27-4	Bromodichloromethane	0.49 U	2.0	0.49	ug/l	
75-25-2	Bromoform	1.4 U	2.0	1.4	ug/l	
108-90-7	Chlorobenzene	0.56 U	2.0	0.56	ug/l	
75-00-3	Chloroethane	0.92 U	2.0	0.92	ug/l	
67-66-3	Chloroform	0.64 U	2.0	0.64	ug/l	
75-15-0	Carbon disulfide	9.7	2.0	0.53	ug/l	
56-23-5	Carbon tetrachloride	0.66 U	2.0	0.66	ug/l	
75-34-3	1,1-Dichloroethane	0.52 U	2.0	0.52	ug/l	
75-35-4	1,1-Dichloroethylene	0.50 U	2.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	0.62 U	2.0	0.62	ug/l	
78-87-5	1,2-Dichloropropane	0.62 U	2.0	0.62	ug/l	
124-48-1	Dibromochloromethane	0.61 U	2.0	0.61	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.56 U	2.0	0.56	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.48 U	2.0	0.48	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.45 U	2.0	0.45	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.68 U	2.0	0.68	ug/l	
100-41-4	Ethylbenzene	0.79	2.0	0.55	ug/l	J
591-78-6	2-Hexanone	3.2 U	10	3.2	ug/l	
108-10-1	4-Methyl-2-pentanone	13.0	10	9.9	ug/l	
74-83-9	Methyl bromide	0.94 U	2.0	0.94	ug/l	
74-87-3	Methyl chloride	0.84 U	2.0	0.84	ug/l	
75-09-2	Methylene chloride	0.41 U	5.0	0.41	ug/l	
78-93-3	Methyl ethyl ketone	78.0	10	3.9	ug/l	
100-42-5	Styrene	0.56 U	2.0	0.56	ug/l	
71-55-6	1,1,1-Trichloroethane	0.62 U	2.0	0.62	ug/l	
79-34-5	1,1,1,2-Tetrachloroethane	1.2 U	2.0	1.2	ug/l	
79-00-5	1,1,2-Trichloroethane	0.98 U	2.0	0.98	ug/l	
127-18-4	Tetrachloroethylene	0.91 U	2.0	0.91	ug/l	
108-88-3	Toluene	1.5	2.0	0.43	ug/l	J
79-01-6	Trichloroethylene	0.52 U	2.0	0.52	ug/l	

U = Not detected SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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3

Client Sample ID:	MCC-WW06-11-100712		
Lab Sample ID:	T56085-4	Date Sampled:	07/12/10
Matrix:	AQ - Water	Date Received:	07/12/10
Method:	SW846 8260B	Percent Solids:	n/a
Project:	US Oil Recovery/400 North Richey, Pasadena, TX		

VOA TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
75-01-4	Vinyl chloride	1.0 U	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	3.2	6.0	1.7	ug/l	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		79-122%
17060-07-0	1,2-Dichloroethane-D4	104%		75-121%
2037-26-5	Toluene-D8	99%		87-119%
460-00-4	4-Bromofluorobenzene	88%		80-133%

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

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3.4
3**Client Sample ID:** MCC-WW06-11-100712**Lab Sample ID:** T56085-4**Date Sampled:** 07/12/10**Matrix:** AQ - Water**Date Received:** 07/12/10**Method:** SW846 8270C SW846 3510C**Percent Solids:** n/a**Project:** US Oil Recovery/400 North Richey, Pasadena, TX

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	P12034.D	1	07/13/10	GJ	07/13/10	OP15356	EP567
Run #2							

	Initial Volume	Final Volume
Run #1	910 ml	5.0 ml
Run #2		

ABN TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
65-85-0	Benzoic Acid	366	55	27	ug/l	
95-57-8	2-Chlorophenol	6.6 U	27	6.6	ug/l	
59-50-7	4-Chloro-3-methyl phenol	6.4 U	27	6.4	ug/l	
120-83-2	2,4-Dichlorophenol	12 U	27	12	ug/l	
105-67-9	2,4-Dimethylphenol	7.0 U	27	7.0	ug/l	
51-28-5	2,4-Dinitrophenol	83 U	140	83	ug/l	
534-52-1	4,6-Dinitro-o-cresol	7.5 U	55	7.5	ug/l	
95-48-7	2-Methylphenol	29.9	27	4.6	ug/l	
	3&4-Methylphenol	510	27	8.7	ug/l	
88-75-5	2-Nitrophenol	11 U	27	11	ug/l	
100-02-7	4-Nitrophenol	37 U	140	37	ug/l	
87-86-5	Pentachlorophenol	73 U	140	73	ug/l	
108-95-2	Phenol	142	27	4.1	ug/l	
95-95-4	2,4,5-Trichlorophenol	6.4 U	27	6.4	ug/l	
88-06-2	2,4,6-Trichlorophenol	6.3 U	27	6.3	ug/l	
83-32-9	Acenaphthene	8.6 U	27	8.6	ug/l	
208-96-8	Acenaphthylene	6.6 U	27	6.6	ug/l	
120-12-7	Anthracene	6.0 U	27	6.0	ug/l	
56-55-3	Benzo(a)anthracene	5.9 U	27	5.9	ug/l	
50-32-8	Benzo(a)pyrene	5.9 U	27	5.9	ug/l	
205-99-2	Benzo(b)fluoranthene	4.8 U	27	4.8	ug/l	
191-24-2	Benzo(g,h,i)perylene	9.1 U	27	9.1	ug/l	
207-08-9	Benzo(k)fluoranthene	5.8 U	27	5.8	ug/l	
101-55-3	4-Bromophenyl phenyl ether	7.6 U	27	7.6	ug/l	
85-68-7	Butyl benzyl phthalate	9.0 U	27	9.0	ug/l	
100-51-6	Benzyl Alcohol	7.1 U	27	7.1	ug/l	
91-58-7	2-Chloronaphthalene	7.6 U	27	7.6	ug/l	
106-47-8	4-Chloroaniline	23 U	27	23	ug/l	
86-74-8	Carbazole	8.2 U	27	8.2	ug/l	
218-01-9	Chrysene	5.4 U	27	5.4	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	7.1 U	27	7.1	ug/l	
111-44-4	bis(2-Chloroethyl)ether	7.1 U	27	7.1	ug/l	

U = Not detected SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MCC-WW06-11-100712	Date Sampled:	07/12/10
Lab Sample ID:	T56085-4	Date Received:	07/12/10
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	US Oil Recovery/400 North Richey, Pasadena, TX		

ABN TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
108-60-1	bis(2-Chloroisopropyl)ether	11 U	27	11	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	7.2 U	27	7.2	ug/l	
95-50-1	1,2-Dichlorobenzene	6.9 U	27	6.9	ug/l	
541-73-1	1,3-Dichlorobenzene	6.9 U	27	6.9	ug/l	
106-46-7	1,4-Dichlorobenzene	7.1 U	27	7.1	ug/l	
121-14-2	2,4-Dinitrotoluene	7.9 U	27	7.9	ug/l	
606-20-2	2,6-Dinitrotoluene	7.3 U	27	7.3	ug/l	
91-94-1	3,3'-Dichlorobenzidine	18 U	55	18	ug/l	
53-70-3	Dibenzo(a,h)anthracene	8.5 U	27	8.5	ug/l	
132-64-9	Dibenzofuran	7.3 U	27	7.3	ug/l	
84-74-2	Di-n-butyl phthalate	5.6 U	27	5.6	ug/l	
117-84-0	Di-n-octyl phthalate	7.2 U	27	7.2	ug/l	
84-66-2	Diethyl phthalate	5.9 U	27	5.9	ug/l	
131-11-3	Dimethyl phthalate	5.8 U	27	5.8	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	9.7 U	27	9.7	ug/l	
206-44-0	Fluoranthene	5.3 U	27	5.3	ug/l	
86-73-7	Fluorene	7.4 U	27	7.4	ug/l	
118-74-1	Hexachlorobenzene	7.4 U	27	7.4	ug/l	
87-68-3	Hexachlorobutadiene	6.0 U	27	6.0	ug/l	
77-47-4	Hexachlorocyclopentadiene	28 U	55	28	ug/l	
67-72-1	Hexachloroethane	5.3 U	27	5.3	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	9.9 U	27	9.9	ug/l	
78-59-1	Isophorone	6.6 U	27	6.6	ug/l	
91-57-6	2-Methylnaphthalene	7.0 U	27	7.0	ug/l	
88-74-4	2-Nitroaniline	7.8 U	27	7.8	ug/l	
99-09-2	3-Nitroaniline	18 U	27	18	ug/l	
100-01-6	4-Nitroaniline	13 U	27	13	ug/l	
91-20-3	Naphthalene	6.2 U	27	6.2	ug/l	
98-95-3	Nitrobenzene	9.5 U	27	9.5	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	7.8 U	27	7.8	ug/l	
86-30-6	N-Nitrosodiphenylamine	9.2 U	27	9.2	ug/l	
85-01-8	Phenanthrene	5.3 U	27	5.3	ug/l	
129-00-0	Pyrene	9.1 U	27	9.1	ug/l	
120-82-1	1,2,4-Trichlorobenzene	7.0 U	27	7.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	36%		10-66%
4165-62-2	Phenol-d5	24%		10-53%
118-79-6	2,4,6-Tribromophenol	88%		32-128%

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	MCC-WW06-11-100712	Date Sampled:	07/12/10
Lab Sample ID:	T56085-4	Date Received:	07/12/10
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	US Oil Recovery/400 North Richey, Pasadena, TX		

ABN TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	54%		29-115%
321-60-8	2-Fluorobiphenyl	82%		34-113%
1718-51-0	Terphenyl-d14	70%		12-145%

(a) Elevated reporting limits due to matrix interference, final volume 5 ml.

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID: MCC-WW06-11-100712

Lab Sample ID: T56085-4

Date Sampled: 07/12/10

Matrix: AQ - Water

Date Received: 07/12/10

Percent Solids: n/a

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Total Metals Analysis

Analyte	Result	MQL	SDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	0.493	0.20	0.012	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Antimony	0.0010 U	0.0050	0.0010	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Arsenic	0.0077	0.0050	0.0010	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Barium	0.0058 B	0.20	0.0034	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Beryllium	0.00016 U	0.0050	0.00016	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Cadmium	0.000090 B	0.0040	0.000090	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Calcium	15.3	5.0	0.025	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Chromium	0.0070 B	0.010	0.00027	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Cobalt	0.0026 B	0.050	0.00022	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Copper	0.0059 U	0.025	0.0059	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Iron	0.259	0.10	0.023	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Lead	0.0069	0.0030	0.0018	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Magnesium	9.16	5.0	0.0079	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Manganese	0.0483	0.015	0.0019	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Mercury	0.000094 U	0.00020	0.000094	mg/l	1	07/13/10	07/13/10 CN	SW846 7470A ¹	SW846 7470A ⁴
Nickel	0.0902	0.040	0.0014	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Potassium	61.4	5.0	0.045	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Selenium	0.0027 B	0.0050	0.00098	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Silver	0.00024 U	0.010	0.00024	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Sodium	720	10	0.21	mg/l	2	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Thallium	0.0012 U	0.010	0.0012	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Vanadium	0.0055 B	0.050	0.00030	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Zinc	0.140	0.020	0.0035	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³

(1) Instrument QC Batch: MA4909

(2) Instrument QC Batch: MA4911

(3) Prep QC Batch: MP12270

(4) Prep QC Batch: MP12275

MQL = Method Quantitation Limit

SDL = Sample Detection Limit

U = Indicates a result < SDL

B = Indicates a result > = SDL but < MQL

Report of Analysis

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3.5
3**Client Sample ID:** MCC-WW07-12-100712**Lab Sample ID:** T56085-5**Date Sampled:** 07/12/10**Matrix:** AQ - Water**Date Received:** 07/12/10**Method:** SW846 8260B**Percent Solids:** n/a**Project:** US Oil Recovery/400 North Richey, Pasadena, TX

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F027239.D	1	07/13/10	RR	n/a	n/a	VF3924
Run #2							

Purge Volume

Run #1 5.0 ml

Run #2

VOA TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
67-64-1	Acetone	450	50	4.7	ug/l	B
71-43-2	Benzene	1.9	2.0	0.50	ug/l	J
75-27-4	Bromodichloromethane	0.49 U	2.0	0.49	ug/l	
75-25-2	Bromoform	1.4 U	2.0	1.4	ug/l	
108-90-7	Chlorobenzene	0.56 U	2.0	0.56	ug/l	
75-00-3	Chloroethane	0.92 U	2.0	0.92	ug/l	
67-66-3	Chloroform	0.64 U	2.0	0.64	ug/l	
75-15-0	Carbon disulfide	8.2	2.0	0.53	ug/l	
56-23-5	Carbon tetrachloride	0.66 U	2.0	0.66	ug/l	
75-34-3	1,1-Dichloroethane	0.52 U	2.0	0.52	ug/l	
75-35-4	1,1-Dichloroethylene	0.50 U	2.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	0.62 U	2.0	0.62	ug/l	
78-87-5	1,2-Dichloropropane	0.62 U	2.0	0.62	ug/l	
124-48-1	Dibromochloromethane	0.61 U	2.0	0.61	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.56 U	2.0	0.56	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.48 U	2.0	0.48	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.45 U	2.0	0.45	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.68 U	2.0	0.68	ug/l	
100-41-4	Ethylbenzene	1.2	2.0	0.55	ug/l	J
591-78-6	2-Hexanone	3.2 U	10	3.2	ug/l	
108-10-1	4-Methyl-2-pentanone	15.2	10	9.9	ug/l	
74-83-9	Methyl bromide	0.94 U	2.0	0.94	ug/l	
74-87-3	Methyl chloride	0.84 U	2.0	0.84	ug/l	
75-09-2	Methylene chloride	0.41 U	5.0	0.41	ug/l	
78-93-3	Methyl ethyl ketone	93.2	10	3.9	ug/l	
100-42-5	Styrene	0.56 U	2.0	0.56	ug/l	
71-55-6	1,1,1-Trichloroethane	0.62 U	2.0	0.62	ug/l	
79-34-5	1,1,1,2-Tetrachloroethane	1.2 U	2.0	1.2	ug/l	
79-00-5	1,1,2-Trichloroethane	0.98 U	2.0	0.98	ug/l	
127-18-4	Tetrachloroethylene	0.91 U	2.0	0.91	ug/l	
108-88-3	Toluene	2.0	2.0	0.43	ug/l	
79-01-6	Trichloroethylene	0.52 U	2.0	0.52	ug/l	

U = Not detected SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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3

Client Sample ID:	MCC-WW07-12-100712	Date Sampled:	07/12/10
Lab Sample ID:	T56085-5	Date Received:	07/12/10
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	US Oil Recovery/400 North Richey, Pasadena, TX		

VOA TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
75-01-4	Vinyl chloride	1.0 U	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	4.3	6.0	1.7	ug/l	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		79-122%
17060-07-0	1,2-Dichloroethane-D4	105%		75-121%
2037-26-5	Toluene-D8	109%		87-119%
460-00-4	4-Bromofluorobenzene	117%		80-133%

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

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3.5
3**Client Sample ID:** MCC-WW07-12-100712**Lab Sample ID:** T56085-5**Date Sampled:** 07/12/10**Matrix:** AQ - Water**Date Received:** 07/12/10**Method:** SW846 8270C SW846 3510C**Percent Solids:** n/a**Project:** US Oil Recovery/400 North Richey, Pasadena, TX

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	P12035.D	1	07/13/10	GJ	07/13/10	OP15356	EP567
Run #2							

	Initial Volume	Final Volume
Run #1	910 ml	5.0 ml
Run #2		

ABN TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
65-85-0	Benzoic Acid	321	55	27	ug/l	
95-57-8	2-Chlorophenol	6.6 U	27	6.6	ug/l	
59-50-7	4-Chloro-3-methyl phenol	6.4 U	27	6.4	ug/l	
120-83-2	2,4-Dichlorophenol	12 U	27	12	ug/l	
105-67-9	2,4-Dimethylphenol	7.0 U	27	7.0	ug/l	
51-28-5	2,4-Dinitrophenol	83 U	140	83	ug/l	
534-52-1	4,6-Dinitro-o-cresol	7.5 U	55	7.5	ug/l	
95-48-7	2-Methylphenol	23.2	27	4.6	ug/l	J
	3&4-Methylphenol	362	27	8.7	ug/l	
88-75-5	2-Nitrophenol	11 U	27	11	ug/l	
100-02-7	4-Nitrophenol	37 U	140	37	ug/l	
87-86-5	Pentachlorophenol	73 U	140	73	ug/l	
108-95-2	Phenol	108	27	4.1	ug/l	
95-95-4	2,4,5-Trichlorophenol	6.4 U	27	6.4	ug/l	
88-06-2	2,4,6-Trichlorophenol	6.3 U	27	6.3	ug/l	
83-32-9	Acenaphthene	8.6 U	27	8.6	ug/l	
208-96-8	Acenaphthylene	6.6 U	27	6.6	ug/l	
120-12-7	Anthracene	6.0 U	27	6.0	ug/l	
56-55-3	Benzo(a)anthracene	5.9 U	27	5.9	ug/l	
50-32-8	Benzo(a)pyrene	5.9 U	27	5.9	ug/l	
205-99-2	Benzo(b)fluoranthene	4.8 U	27	4.8	ug/l	
191-24-2	Benzo(g,h,i)perylene	9.1 U	27	9.1	ug/l	
207-08-9	Benzo(k)fluoranthene	5.8 U	27	5.8	ug/l	
101-55-3	4-Bromophenyl phenyl ether	7.6 U	27	7.6	ug/l	
85-68-7	Butyl benzyl phthalate	9.0 U	27	9.0	ug/l	
100-51-6	Benzyl Alcohol	7.1 U	27	7.1	ug/l	
91-58-7	2-Chloronaphthalene	7.6 U	27	7.6	ug/l	
106-47-8	4-Chloroaniline	23 U	27	23	ug/l	
86-74-8	Carbazole	8.2 U	27	8.2	ug/l	
218-01-9	Chrysene	5.4 U	27	5.4	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	7.1 U	27	7.1	ug/l	
111-44-4	bis(2-Chloroethyl)ether	7.1 U	27	7.1	ug/l	

U = Not detected SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MCC-WW07-12-100712	Date Sampled:	07/12/10
Lab Sample ID:	T56085-5	Date Received:	07/12/10
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	US Oil Recovery/400 North Richey, Pasadena, TX		

ABN TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
108-60-1	bis(2-Chloroisopropyl)ether	11 U	27	11	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	7.2 U	27	7.2	ug/l	
95-50-1	1,2-Dichlorobenzene	6.9 U	27	6.9	ug/l	
541-73-1	1,3-Dichlorobenzene	6.9 U	27	6.9	ug/l	
106-46-7	1,4-Dichlorobenzene	7.1 U	27	7.1	ug/l	
121-14-2	2,4-Dinitrotoluene	7.9 U	27	7.9	ug/l	
606-20-2	2,6-Dinitrotoluene	7.3 U	27	7.3	ug/l	
91-94-1	3,3'-Dichlorobenzidine	18 U	55	18	ug/l	
53-70-3	Dibenzo(a,h)anthracene	8.5 U	27	8.5	ug/l	
132-64-9	Dibenzofuran	7.3 U	27	7.3	ug/l	
84-74-2	Di-n-butyl phthalate	5.6 U	27	5.6	ug/l	
117-84-0	Di-n-octyl phthalate	7.2 U	27	7.2	ug/l	
84-66-2	Diethyl phthalate	5.9 U	27	5.9	ug/l	
131-11-3	Dimethyl phthalate	5.8 U	27	5.8	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	12.0	27	9.7	ug/l	J
206-44-0	Fluoranthene	5.3 U	27	5.3	ug/l	
86-73-7	Fluorene	7.4 U	27	7.4	ug/l	
118-74-1	Hexachlorobenzene	7.4 U	27	7.4	ug/l	
87-68-3	Hexachlorobutadiene	6.0 U	27	6.0	ug/l	
77-47-4	Hexachlorocyclopentadiene	28 U	55	28	ug/l	
67-72-1	Hexachloroethane	5.3 U	27	5.3	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	9.9 U	27	9.9	ug/l	
78-59-1	Isophorone	6.6 U	27	6.6	ug/l	
91-57-6	2-Methylnaphthalene	7.0 U	27	7.0	ug/l	
88-74-4	2-Nitroaniline	7.8 U	27	7.8	ug/l	
99-09-2	3-Nitroaniline	18 U	27	18	ug/l	
100-01-6	4-Nitroaniline	13 U	27	13	ug/l	
91-20-3	Naphthalene	6.8	27	6.2	ug/l	J
98-95-3	Nitrobenzene	9.5 U	27	9.5	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	7.8 U	27	7.8	ug/l	
86-30-6	N-Nitrosodiphenylamine	9.2 U	27	9.2	ug/l	
85-01-8	Phenanthrene	5.3 U	27	5.3	ug/l	
129-00-0	Pyrene	9.1 U	27	9.1	ug/l	
120-82-1	1,2,4-Trichlorobenzene	7.0 U	27	7.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	24%		10-66%
4165-62-2	Phenol-d5	17%		10-53%
118-79-6	2,4,6-Tribromophenol	75%		32-128%

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	MCC-WW07-12-100712	Date Sampled:	07/12/10
Lab Sample ID:	T56085-5	Date Received:	07/12/10
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	US Oil Recovery/400 North Richey, Pasadena, TX		

ABN TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	42%		29-115%
321-60-8	2-Fluorobiphenyl	74%		34-113%
1718-51-0	Terphenyl-d14	46%		12-145%

(a) Elevated reporting limits due to matrix interference, final volume 5 ml.

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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3**Client Sample ID:** MCC-WW07-12-100712**Lab Sample ID:** T56085-5**Date Sampled:** 07/12/10**Matrix:** AQ - Water**Date Received:** 07/12/10**Percent Solids:** n/a**Project:** US Oil Recovery/400 North Richey, Pasadena, TX

Total Metals Analysis

Analyte	Result	MQL	SDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	0.481	0.20	0.012	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Antimony	0.0010 U	0.0050	0.0010	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Arsenic	0.0082	0.0050	0.0010	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Barium	0.0047 B	0.20	0.0034	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Beryllium	0.00016 U	0.0050	0.00016	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Cadmium	0.00015 B	0.0040	0.000090	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Calcium	15.3	5.0	0.025	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Chromium	0.0069 B	0.010	0.00027	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Cobalt	0.0025 B	0.050	0.00022	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Copper	0.0059 U	0.025	0.0059	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Iron	0.271	0.10	0.023	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Lead	0.0069	0.0030	0.0018	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Magnesium	9.11	5.0	0.0079	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Manganese	0.0462	0.015	0.0019	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Mercury	0.000094 U	0.00020	0.000094	mg/l	1	07/13/10	07/13/10 CN	SW846 7470A ¹	SW846 7470A ⁴
Nickel	0.0901	0.040	0.0014	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Potassium	61.6	5.0	0.045	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Selenium	0.0013 B	0.0050	0.00098	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Silver	0.00024 U	0.010	0.00024	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Sodium	726	25	0.52	mg/l	5	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Thallium	0.0012 U	0.010	0.0012	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Vanadium	0.0055 B	0.050	0.00030	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Zinc	0.139	0.020	0.0035	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³

(1) Instrument QC Batch: MA4909

(2) Instrument QC Batch: MA4911

(3) Prep QC Batch: MP12270

(4) Prep QC Batch: MP12275

MQL = Method Quantitation Limit

SDL = Sample Detection Limit

U = Indicates a result < SDL

B = Indicates a result > = SDL but < MQL

Report of Analysis

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3.6
3**Client Sample ID:** MCC-WW08-11-100712**Lab Sample ID:** T56085-6**Date Sampled:** 07/12/10**Matrix:** AQ - Water**Date Received:** 07/12/10**Method:** SW846 8260B**Percent Solids:** n/a**Project:** US Oil Recovery/400 North Richey, Pasadena, TX

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F027240.D	5	07/13/10	RR	n/a	n/a	VF3924
Run #2	X0063359.D	25	07/14/10	NM	n/a	n/a	VX628

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

VOA TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
67-64-1	Acetone	18500 ^a	1300	120	ug/l	
71-43-2	Benzene	3130 ^a	50	12	ug/l	
75-27-4	Bromodichloromethane	2.4 U	10	2.4	ug/l	
75-25-2	Bromoform	6.8 U	10	6.8	ug/l	
108-90-7	Chlorobenzene	2.8 U	10	2.8	ug/l	
75-00-3	Chloroethane	4.6 U	10	4.6	ug/l	
67-66-3	Chloroform	17.7	10	3.2	ug/l	
75-15-0	Carbon disulfide	32.0	10	2.6	ug/l	
56-23-5	Carbon tetrachloride	3.3 U	10	3.3	ug/l	
75-34-3	1,1-Dichloroethane	2.6 U	10	2.6	ug/l	
75-35-4	1,1-Dichloroethylene	2.5 U	10	2.5	ug/l	
107-06-2	1,2-Dichloroethane	991 ^a	50	15	ug/l	
78-87-5	1,2-Dichloropropane	5.3	10	3.1	ug/l	J
124-48-1	Dibromochloromethane	3.1 U	10	3.1	ug/l	
156-59-2	cis-1,2-Dichloroethylene	2.8 U	10	2.8	ug/l	
10061-01-5	cis-1,3-Dichloropropene	2.4 U	10	2.4	ug/l	
156-60-5	trans-1,2-Dichloroethylene	2.2 U	10	2.2	ug/l	
10061-02-6	trans-1,3-Dichloropropene	3.4 U	10	3.4	ug/l	
100-41-4	Ethylbenzene	1920 ^a	50	14	ug/l	
591-78-6	2-Hexanone	16 U	50	16	ug/l	
108-10-1	4-Methyl-2-pentanone	2100	50	50	ug/l	
74-83-9	Methyl bromide	4.7 U	10	4.7	ug/l	
74-87-3	Methyl chloride	4.2 U	10	4.2	ug/l	
75-09-2	Methylene chloride	669	25	2.0	ug/l	
78-93-3	Methyl ethyl ketone	2750	50	19	ug/l	
100-42-5	Styrene	2.8 U	10	2.8	ug/l	
71-55-6	1,1,1-Trichloroethane	3.1 U	10	3.1	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	5.8 U	10	5.8	ug/l	
79-00-5	1,1,2-Trichloroethane	4.9 U	10	4.9	ug/l	
127-18-4	Tetrachloroethylene	40.9	10	4.6	ug/l	
108-88-3	Toluene	3380 ^a	50	11	ug/l	
79-01-6	Trichloroethylene	47.9	10	2.6	ug/l	

U = Not detected SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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3

Client Sample ID:	MCC-WW08-11-100712	Date Sampled:	07/12/10
Lab Sample ID:	T56085-6	Date Received:	07/12/10
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	US Oil Recovery/400 North Richey, Pasadena, TX		

VOA TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
75-01-4	Vinyl chloride	5.1 U	10	5.1	ug/l	
1330-20-7	Xylene (total)	8770 ^a	150	42	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%	98%	79-122%
17060-07-0	1,2-Dichloroethane-D4	99%	89%	75-121%
2037-26-5	Toluene-D8	104%	97%	87-119%
460-00-4	4-Bromofluorobenzene	113%	87%	80-133%

(a) Result is from Run# 2

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

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3.6
3**Client Sample ID:** MCC-WW08-11-100712**Lab Sample ID:** T56085-6**Date Sampled:** 07/12/10**Matrix:** AQ - Water**Date Received:** 07/12/10**Method:** SW846 8270C SW846 3510C**Percent Solids:** n/a**Project:** US Oil Recovery/400 North Richey, Pasadena, TX

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	P12037.D	40	07/13/10	GJ	07/13/10	OP15356	EP567
Run #2 ^a	P12038.D	200	07/13/10	GJ	07/13/10	OP15356	EP567

	Initial Volume	Final Volume
Run #1	920 ml	5.0 ml
Run #2	920 ml	5.0 ml

ABN TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
65-85-0	Benzoic Acid	1100 U	2200	1100	ug/l	
95-57-8	2-Chlorophenol	260 U	1100	260	ug/l	
59-50-7	4-Chloro-3-methyl phenol	250 U	1100	250	ug/l	
120-83-2	2,4-Dichlorophenol	480 U	1100	480	ug/l	
105-67-9	2,4-Dimethylphenol	280 U	1100	280	ug/l	
51-28-5	2,4-Dinitrophenol	3300 U	5400	3300	ug/l	
534-52-1	4,6-Dinitro-o-cresol	300 U	2200	300	ug/l	
95-48-7	2-Methylphenol	180 U	1100	180	ug/l	
	3&4-Methylphenol	1340	1100	340	ug/l	
88-75-5	2-Nitrophenol	430 U	1100	430	ug/l	
100-02-7	4-Nitrophenol	1400 U	5400	1400	ug/l	
87-86-5	Pentachlorophenol	2900 U	5400	2900	ug/l	
108-95-2	Phenol	160 U	1100	160	ug/l	
95-95-4	2,4,5-Trichlorophenol	250 U	1100	250	ug/l	
88-06-2	2,4,6-Trichlorophenol	250 U	1100	250	ug/l	
83-32-9	Acenaphthene	847	1100	340	ug/l	J
208-96-8	Acenaphthylene	260 U	1100	260	ug/l	
120-12-7	Anthracene	240 U	1100	240	ug/l	
56-55-3	Benzo(a)anthracene	230 U	1100	230	ug/l	
50-32-8	Benzo(a)pyrene	230 U	1100	230	ug/l	
205-99-2	Benzo(b)fluoranthene	190 U	1100	190	ug/l	
191-24-2	Benzo(g,h,i)perylene	360 U	1100	360	ug/l	
207-08-9	Benzo(k)fluoranthene	230 U	1100	230	ug/l	
101-55-3	4-Bromophenyl phenyl ether	300 U	1100	300	ug/l	
85-68-7	Butyl benzyl phthalate	350 U	1100	350	ug/l	
100-51-6	Benzyl Alcohol	280 U	1100	280	ug/l	
91-58-7	2-Chloronaphthalene	300 U	1100	300	ug/l	
106-47-8	4-Chloroaniline	930 U	1100	930	ug/l	
86-74-8	Carbazole	320 U	1100	320	ug/l	
218-01-9	Chrysene	210 U	1100	210	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	280 U	1100	280	ug/l	
111-44-4	bis(2-Chloroethyl)ether	280 U	1100	280	ug/l	

U = Not detected SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MCC-WW08-11-100712	Date Sampled:	07/12/10
Lab Sample ID:	T56085-6	Date Received:	07/12/10
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	US Oil Recovery/400 North Richey, Pasadena, TX		

ABN TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
108-60-1	bis(2-Chloroisopropyl)ether	430 U	1100	430	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	280 U	1100	280	ug/l	
95-50-1	1,2-Dichlorobenzene	270 U	1100	270	ug/l	
541-73-1	1,3-Dichlorobenzene	270 U	1100	270	ug/l	
106-46-7	1,4-Dichlorobenzene	280 U	1100	280	ug/l	
121-14-2	2,4-Dinitrotoluene	310 U	1100	310	ug/l	
606-20-2	2,6-Dinitrotoluene	290 U	1100	290	ug/l	
91-94-1	3,3'-Dichlorobenzidine	690 U	2200	690	ug/l	
53-70-3	Dibenzo(a,h)anthracene	340 U	1100	340	ug/l	
132-64-9	Dibenzofuran	290 U	1100	290	ug/l	
84-74-2	Di-n-butyl phthalate	377	1100	220	ug/l	J
117-84-0	Di-n-octyl phthalate	280 U	1100	280	ug/l	
84-66-2	Diethyl phthalate	230 U	1100	230	ug/l	
131-11-3	Dimethyl phthalate	230 U	1100	230	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	926	1100	380	ug/l	J
206-44-0	Fluoranthene	210 U	1100	210	ug/l	
86-73-7	Fluorene	465	1100	290	ug/l	J
118-74-1	Hexachlorobenzene	290 U	1100	290	ug/l	
87-68-3	Hexachlorobutadiene	240 U	1100	240	ug/l	
77-47-4	Hexachlorocyclopentadiene	1100 U	2200	1100	ug/l	
67-72-1	Hexachloroethane	210 U	1100	210	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	390 U	1100	390	ug/l	
78-59-1	Isophorone	260 U	1100	260	ug/l	
91-57-6	2-Methylnaphthalene	9440	1100	280	ug/l	
88-74-4	2-Nitroaniline	310 U	1100	310	ug/l	
99-09-2	3-Nitroaniline	720 U	1100	720	ug/l	
100-01-6	4-Nitroaniline	510 U	1100	510	ug/l	
91-20-3	Naphthalene	32000 ^b	5400	1200	ug/l	
98-95-3	Nitrobenzene	380 U	1100	380	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	310 U	1100	310	ug/l	
86-30-6	N-Nitrosodiphenylamine	360 U	1100	360	ug/l	
85-01-8	Phenanthrene	735	1100	210	ug/l	J
129-00-0	Pyrene	360 U	1100	360	ug/l	
120-82-1	1,2,4-Trichlorobenzene	280 U	1100	280	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	0% ^c	0% ^c	10-66%
4165-62-2	Phenol-d5	0% ^c	0% ^c	10-53%
118-79-6	2,4,6-Tribromophenol	0% ^c	0% ^c	32-128%

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

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3

Client Sample ID:	MCC-WW08-11-100712	Date Sampled:	07/12/10
Lab Sample ID:	T56085-6	Date Received:	07/12/10
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	US Oil Recovery/400 North Richey, Pasadena, TX		

ABN TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	115%	0% ^c	29-115%
321-60-8	2-Fluorobiphenyl	65%	0% ^c	34-113%
1718-51-0	Terphenyl-d14	91%	0% ^c	12-145%

- (a) Elevated reporting limits and internal standards are not within advisory limits due to matrix interference, final volume of 5 ml. Confirmed by reanalysis.
- (b) Result is from Run# 2
- (c) Outside control limits due to dilution.

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

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3**Client Sample ID:** MCC-WW08-11-100712**Lab Sample ID:** T56085-6**Date Sampled:** 07/12/10**Matrix:** AQ - Water**Date Received:** 07/12/10**Percent Solids:** n/a**Project:** US Oil Recovery/400 North Richey, Pasadena, TX

Total Metals Analysis

Analyte	Result	MQL	SDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	212	0.20	0.012	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Antimony	0.637	0.0050	0.0010	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Arsenic	0.118	0.0050	0.0010	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Barium	19.5	0.20	0.0034	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Beryllium	0.00016 U	0.0050	0.00016	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Cadmium	0.0155	0.0040	0.000090	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Calcium	202	5.0	0.025	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Chromium	0.932	0.010	0.00027	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Cobalt	0.324	0.050	0.00022	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Copper	2.56	0.025	0.0059	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Iron	188	0.10	0.023	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Lead	1.11	0.0030	0.0018	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Magnesium	21.8	5.0	0.0079	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Manganese	1.91	0.015	0.0019	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Mercury	0.264	0.020	0.0094	mg/l	100	07/13/10	07/13/10 CN	SW846 7470A ¹	SW846 7470A ⁴
Nickel	1.89	0.040	0.0014	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Potassium	167	5.0	0.045	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Selenium	0.0129	0.0050	0.00098	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Silver	0.0227	0.010	0.00024	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Sodium	1030	25	0.52	mg/l	5	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Thallium	0.0012 U	0.010	0.0012	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Vanadium	0.548	0.050	0.00030	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Zinc	35.4	0.10	0.017	mg/l	5	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³

(1) Instrument QC Batch: MA4909

(2) Instrument QC Batch: MA4911

(3) Prep QC Batch: MP12270

(4) Prep QC Batch: MP12275

MQL = Method Quantitation Limit

SDL = Sample Detection Limit

U = Indicates a result < SDL

B = Indicates a result > = SDL but < MQL

Report of Analysis

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3.7
3**Client Sample ID:** MCC-WW09-11-100712**Lab Sample ID:** T56085-7**Date Sampled:** 07/12/10**Matrix:** AQ - Water**Date Received:** 07/12/10**Method:** SW846 8260B**Percent Solids:** n/a**Project:** US Oil Recovery/400 North Richey, Pasadena, TX

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F027241.D	1	07/13/10	RR	n/a	n/a	VF3924
Run #2 ^a	X0063355.D	1	07/14/10	NM	n/a	n/a	VX628

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

VOA TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
67-64-1	Acetone	78.3	50	4.7	ug/l	
71-43-2	Benzene	0.50 U	2.0	0.50	ug/l	
75-27-4	Bromodichloromethane	0.49 U	2.0	0.49	ug/l	
75-25-2	Bromoform	1.4 U	2.0	1.4	ug/l	
108-90-7	Chlorobenzene	0.56 U	2.0	0.56	ug/l	
75-00-3	Chloroethane	0.92 U	2.0	0.92	ug/l	
67-66-3	Chloroform	0.64 U	2.0	0.64	ug/l	
75-15-0	Carbon disulfide	1.2	2.0	0.53	ug/l	J
56-23-5	Carbon tetrachloride	0.66 U	2.0	0.66	ug/l	
75-34-3	1,1-Dichloroethane	0.52 U	2.0	0.52	ug/l	
75-35-4	1,1-Dichloroethylene	0.50 U	2.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	0.62 U	2.0	0.62	ug/l	
78-87-5	1,2-Dichloropropane	0.62 U	2.0	0.62	ug/l	
124-48-1	Dibromochloromethane	0.61 U	2.0	0.61	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.56 U	2.0	0.56	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.48 U	2.0	0.48	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.45 U	2.0	0.45	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.68 U	2.0	0.68	ug/l	
100-41-4	Ethylbenzene	0.92	2.0	0.55	ug/l	J
591-78-6	2-Hexanone	3.2 U	10	3.2	ug/l	
108-10-1	4-Methyl-2-pentanone	9.9 U	10	9.9	ug/l	
74-83-9	Methyl bromide	0.94 U	2.0	0.94	ug/l	
74-87-3	Methyl chloride	0.84 U	2.0	0.84	ug/l	
75-09-2	Methylene chloride	0.41 U	5.0	0.41	ug/l	
78-93-3	Methyl ethyl ketone	8.7	10	3.9	ug/l	J
100-42-5	Styrene	0.56 U	2.0	0.56	ug/l	
71-55-6	1,1,1-Trichloroethane	0.62 U	2.0	0.62	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	1.2 U	2.0	1.2	ug/l	
79-00-5	1,1,2-Trichloroethane	0.98 U	2.0	0.98	ug/l	
127-18-4	Tetrachloroethylene	0.91 U	2.0	0.91	ug/l	
108-88-3	Toluene	0.81	2.0	0.43	ug/l	J
79-01-6	Trichloroethylene	0.52 U	2.0	0.52	ug/l	

U = Not detected SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	MCC-WW09-11-100712	Date Sampled:	07/12/10
Lab Sample ID:	T56085-7	Date Received:	07/12/10
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	US Oil Recovery/400 North Richey, Pasadena, TX		

VOA TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
75-01-4	Vinyl chloride	1.0 U	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	4.0	6.0	1.7	ug/l	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%	97%	79-122%
17060-07-0	1,2-Dichloroethane-D4	95%	89%	75-121%
2037-26-5	Toluene-D8	108%	86%	87-119%
460-00-4	4-Bromofluorobenzene	107%	89%	80-133%

(a) Sample reported for QC purposes only.

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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3**Client Sample ID:** MCC-WW09-11-100712**Lab Sample ID:** T56085-7**Date Sampled:** 07/12/10**Matrix:** AQ - Water**Date Received:** 07/12/10**Method:** SW846 8270C SW846 3510C**Percent Solids:** n/a**Project:** US Oil Recovery/400 North Richey, Pasadena, TX

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	P12036.D	1	07/13/10	GJ	07/13/10	OP15356	EP567
Run #2 ^b	P12039.D	4	07/13/10	GJ	07/13/10	OP15356	EP567

	Initial Volume	Final Volume
Run #1	920 ml	5.0 ml
Run #2	920 ml	5.0 ml

ABN TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
65-85-0	Benzoic Acid	27 U	54	27	ug/l	
95-57-8	2-Chlorophenol	6.5 U	27	6.5	ug/l	
59-50-7	4-Chloro-3-methyl phenol	6.3 U	27	6.3	ug/l	
120-83-2	2,4-Dichlorophenol	12 U	27	12	ug/l	
105-67-9	2,4-Dimethylphenol	6.9 U	27	6.9	ug/l	
51-28-5	2,4-Dinitrophenol	82 U	140	82	ug/l	
534-52-1	4,6-Dinitro-o-cresol	7.4 U	54	7.4	ug/l	
95-48-7	2-Methylphenol	4.5 U	27	4.5	ug/l	
	3&4-Methylphenol	8.6 U	27	8.6	ug/l	
88-75-5	2-Nitrophenol	11 U	27	11	ug/l	
100-02-7	4-Nitrophenol	36 U	140	36	ug/l	
87-86-5	Pentachlorophenol	72 U	140	72	ug/l	
108-95-2	Phenol	4.1 U	27	4.1	ug/l	
95-95-4	2,4,5-Trichlorophenol	6.3 U	27	6.3	ug/l	
88-06-2	2,4,6-Trichlorophenol	6.2 U	27	6.2	ug/l	
83-32-9	Acenaphthene	8.5 U	27	8.5	ug/l	
208-96-8	Acenaphthylene	6.6 U	27	6.6	ug/l	
120-12-7	Anthracene	6.0 U	27	6.0	ug/l	
56-55-3	Benzo(a)anthracene	5.9 U	27	5.9	ug/l	
50-32-8	Benzo(a)pyrene	5.9 U	27	5.9	ug/l	
205-99-2	Benzo(b)fluoranthene	4.7 U	27	4.7	ug/l	
191-24-2	Benzo(g,h,i)perylene	9.0 U	27	9.0	ug/l	
207-08-9	Benzo(k)fluoranthene	5.8 U	27	5.8	ug/l	
101-55-3	4-Bromophenyl phenyl ether	7.5 U	27	7.5	ug/l	
85-68-7	Butyl benzyl phthalate	8.9 U	27	8.9	ug/l	
100-51-6	Benzyl Alcohol	7.1 U	27	7.1	ug/l	
91-58-7	2-Chloronaphthalene	7.6 U	27	7.6	ug/l	
106-47-8	4-Chloroaniline	23 U	27	23	ug/l	
86-74-8	Carbazole	8.1 U	27	8.1	ug/l	
218-01-9	Chrysene	6.1	27	5.3	ug/l	J
111-91-1	bis(2-Chloroethoxy)methane	7.0 U	27	7.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	7.1 U	27	7.1	ug/l	

U = Not detected SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MCC-WW09-11-100712	Date Sampled:	07/12/10
Lab Sample ID:	T56085-7	Date Received:	07/12/10
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	US Oil Recovery/400 North Richey, Pasadena, TX		

ABN TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
108-60-1	bis(2-Chloroisopropyl)ether	11 U	27	11	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	7.1 U	27	7.1	ug/l	
95-50-1	1,2-Dichlorobenzene	6.8 U	27	6.8	ug/l	
541-73-1	1,3-Dichlorobenzene	6.8 U	27	6.8	ug/l	
106-46-7	1,4-Dichlorobenzene	7.0 U	27	7.0	ug/l	
121-14-2	2,4-Dinitrotoluene	7.8 U	27	7.8	ug/l	
606-20-2	2,6-Dinitrotoluene	7.2 U	27	7.2	ug/l	
91-94-1	3,3'-Dichlorobenzidine	17 U	54	17	ug/l	
53-70-3	Dibenzo(a,h)anthracene	8.4 U	27	8.4	ug/l	
132-64-9	Dibenzofuran	7.2 U	27	7.2	ug/l	
84-74-2	Di-n-butyl phthalate	5.5 U	27	5.5	ug/l	
117-84-0	Di-n-octyl phthalate	7.1 U	27	7.1	ug/l	
84-66-2	Diethyl phthalate	5.8 U	27	5.8	ug/l	
131-11-3	Dimethyl phthalate	5.7 U	27	5.7	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	33.7	27	9.6	ug/l	
206-44-0	Fluoranthene	5.3 U	27	5.3	ug/l	
86-73-7	Fluorene	7.3 U	27	7.3	ug/l	
118-74-1	Hexachlorobenzene	7.3 U	27	7.3	ug/l	
87-68-3	Hexachlorobutadiene	6.0 U	27	6.0	ug/l	
77-47-4	Hexachlorocyclopentadiene	28 U	54	28	ug/l	
67-72-1	Hexachloroethane	5.3 U	27	5.3	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	9.8 U	27	9.8	ug/l	
78-59-1	Isophorone	6.5 U	27	6.5	ug/l	
91-57-6	2-Methylnaphthalene	7.0 U	27	7.0	ug/l	
88-74-4	2-Nitroaniline	7.7 U	27	7.7	ug/l	
99-09-2	3-Nitroaniline	18 U	27	18	ug/l	
100-01-6	4-Nitroaniline	13 U	27	13	ug/l	
91-20-3	Naphthalene	6.1 U	27	6.1	ug/l	
98-95-3	Nitrobenzene	9.4 U	27	9.4	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	7.7 U	27	7.7	ug/l	
86-30-6	N-Nitrosodiphenylamine	9.1 U	27	9.1	ug/l	
85-01-8	Phenanthrene	5.3 U	27	5.3	ug/l	
129-00-0	Pyrene	10.5	27	9.0	ug/l	J
120-82-1	1,2,4-Trichlorobenzene	6.9 U	27	6.9	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	38%	32%	10-66%
4165-62-2	Phenol-d5	31%	31%	10-53%
118-79-6	2,4,6-Tribromophenol	94%	75%	32-128%

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Client Sample ID:	MCC-WW09-11-100712	Date Sampled:	07/12/10
Lab Sample ID:	T56085-7	Date Received:	07/12/10
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	US Oil Recovery/400 North Richey, Pasadena, TX		

ABN TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	64%	57%	29-115%
321-60-8	2-Fluorobiphenyl	66%	59%	34-113%
1718-51-0	Terphenyl-d14	77%	48%	12-145%

- (a) Elevated reporting limits and internal standards are not within advisory limits due to matrix interference, final volume of 5 ml. Confirmed by reanalysis.
- (b) Elevated reporting limits and internal standards are not within advisory limits due to matrix interference, final volume of 5 ml.

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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3**Client Sample ID:** MCC-WW09-11-100712**Lab Sample ID:** T56085-7**Date Sampled:** 07/12/10**Matrix:** AQ - Water**Date Received:** 07/12/10**Percent Solids:** n/a**Project:** US Oil Recovery/400 North Richey, Pasadena, TX

Total Metals Analysis

Analyte	Result	MQL	SDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	0.295	0.20	0.012	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Antimony	0.0130	0.0050	0.0010	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Arsenic	0.0083	0.0050	0.0010	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Barium	0.0056 B	0.20	0.0034	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Beryllium	0.00016 U	0.0050	0.00016	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Cadmium	0.000090 U	0.0040	0.000090	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Calcium	77.4	5.0	0.025	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Chromium	0.0080 B	0.010	0.00027	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Cobalt	0.0183 B	0.050	0.00022	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Copper	0.0059 U	0.025	0.0059	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Iron	0.574	0.10	0.023	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Lead	0.0091	0.0030	0.0018	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Magnesium	9.43	5.0	0.0079	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Manganese	0.0946	0.015	0.0019	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Mercury	0.000094 U	0.00020	0.000094	mg/l	1	07/13/10	07/13/10 CN	SW846 7470A ¹	SW846 7470A ⁴
Nickel	0.271	0.040	0.0014	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Potassium	75.6	5.0	0.045	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Selenium	0.0020 B	0.0050	0.00098	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Silver	0.00024 U	0.010	0.00024	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Sodium	581	10	0.21	mg/l	2	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Thallium	0.0012 U	0.010	0.0012	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Vanadium	0.0148 B	0.050	0.00030	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Zinc	0.0529	0.020	0.0035	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³

(1) Instrument QC Batch: MA4909

(2) Instrument QC Batch: MA4911

(3) Prep QC Batch: MP12270

(4) Prep QC Batch: MP12275

MQL = Method Quantitation Limit

SDL = Sample Detection Limit

U = Indicates a result < SDL

B = Indicates a result > = SDL but < MQL

Report of Analysis

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Client Sample ID: MCC-WW10-11-100712**Lab Sample ID:** T56085-8**Date Sampled:** 07/12/10**Matrix:** AQ - Water**Date Received:** 07/12/10**Method:** SW846 8260B**Percent Solids:** n/a**Project:** US Oil Recovery/400 North Richey, Pasadena, TX

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F027242.D	1	07/13/10	RR	n/a	n/a	VF3924
Run #2							

Purge Volume

Run #1 5.0 ml

Run #2

VOA TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
67-64-1	Acetone	8.0	50	4.7	ug/l	JB
71-43-2	Benzene	0.50 U	2.0	0.50	ug/l	
75-27-4	Bromodichloromethane	0.49 U	2.0	0.49	ug/l	
75-25-2	Bromoform	1.4 U	2.0	1.4	ug/l	
108-90-7	Chlorobenzene	0.56 U	2.0	0.56	ug/l	
75-00-3	Chloroethane	0.92 U	2.0	0.92	ug/l	
67-66-3	Chloroform	0.64 U	2.0	0.64	ug/l	
75-15-0	Carbon disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon tetrachloride	0.66 U	2.0	0.66	ug/l	
75-34-3	1,1-Dichloroethane	0.52 U	2.0	0.52	ug/l	
75-35-4	1,1-Dichloroethylene	0.50 U	2.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	0.62 U	2.0	0.62	ug/l	
78-87-5	1,2-Dichloropropane	0.62 U	2.0	0.62	ug/l	
124-48-1	Dibromochloromethane	0.61 U	2.0	0.61	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.56 U	2.0	0.56	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.48 U	2.0	0.48	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.45 U	2.0	0.45	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.68 U	2.0	0.68	ug/l	
100-41-4	Ethylbenzene	0.55 U	2.0	0.55	ug/l	
591-78-6	2-Hexanone	3.2 U	10	3.2	ug/l	
108-10-1	4-Methyl-2-pentanone	9.9 U	10	9.9	ug/l	
74-83-9	Methyl bromide	0.94 U	2.0	0.94	ug/l	
74-87-3	Methyl chloride	0.84 U	2.0	0.84	ug/l	
75-09-2	Methylene chloride	0.41 U	5.0	0.41	ug/l	
78-93-3	Methyl ethyl ketone	3.9 U	10	3.9	ug/l	
100-42-5	Styrene	0.56 U	2.0	0.56	ug/l	
71-55-6	1,1,1-Trichloroethane	0.62 U	2.0	0.62	ug/l	
79-34-5	1,1,1,2-Tetrachloroethane	1.2 U	2.0	1.2	ug/l	
79-00-5	1,1,2-Trichloroethane	0.98 U	2.0	0.98	ug/l	
127-18-4	Tetrachloroethylene	0.91 U	2.0	0.91	ug/l	
108-88-3	Toluene	0.43 U	2.0	0.43	ug/l	
79-01-6	Trichloroethylene	0.52 U	2.0	0.52	ug/l	

U = Not detected SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	MCC-WW10-11-100712	Date Sampled:	07/12/10
Lab Sample ID:	T56085-8	Date Received:	07/12/10
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	US Oil Recovery/400 North Richey, Pasadena, TX		

VOA TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
75-01-4	Vinyl chloride	1.0 U	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	1.7 U	6.0	1.7	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		79-122%
17060-07-0	1,2-Dichloroethane-D4	94%		75-121%
2037-26-5	Toluene-D8	108%		87-119%
460-00-4	4-Bromofluorobenzene	112%		80-133%

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Client Sample ID: MCC-WW10-11-100712**Lab Sample ID:** T56085-8**Date Sampled:** 07/12/10**Matrix:** AQ - Water**Date Received:** 07/12/10**Method:** SW846 8270C SW846 3510C**Percent Solids:** n/a**Project:** US Oil Recovery/400 North Richey, Pasadena, TX

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P12030.D	1	07/13/10	GJ	07/13/10	OP15356	EP567
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

ABN TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
65-85-0	Benzoic Acid	5.0 U	10	5.0	ug/l	
95-57-8	2-Chlorophenol	1.2 U	5.0	1.2	ug/l	
59-50-7	4-Chloro-3-methyl phenol	1.2 U	5.0	1.2	ug/l	
120-83-2	2,4-Dichlorophenol	2.2 U	5.0	2.2	ug/l	
105-67-9	2,4-Dimethylphenol	1.3 U	5.0	1.3	ug/l	
51-28-5	2,4-Dinitrophenol	15 U	25	15	ug/l	
534-52-1	4,6-Dinitro-o-cresol	1.4 U	10	1.4	ug/l	
95-48-7	2-Methylphenol	0.83 U	5.0	0.83	ug/l	
	3&4-Methylphenol	1.6 U	5.0	1.6	ug/l	
88-75-5	2-Nitrophenol	2.0 U	5.0	2.0	ug/l	
100-02-7	4-Nitrophenol	6.7 U	25	6.7	ug/l	
87-86-5	Pentachlorophenol	13 U	25	13	ug/l	
108-95-2	Phenol	0.75 U	5.0	0.75	ug/l	
95-95-4	2,4,5-Trichlorophenol	1.2 U	5.0	1.2	ug/l	
88-06-2	2,4,6-Trichlorophenol	1.1 U	5.0	1.1	ug/l	
83-32-9	Acenaphthene	1.6 U	5.0	1.6	ug/l	
208-96-8	Acenaphthylene	1.2 U	5.0	1.2	ug/l	
120-12-7	Anthracene	1.1 U	5.0	1.1	ug/l	
56-55-3	Benzo(a)anthracene	1.1 U	5.0	1.1	ug/l	
50-32-8	Benzo(a)pyrene	1.1 U	5.0	1.1	ug/l	
205-99-2	Benzo(b)fluoranthene	0.87 U	5.0	0.87	ug/l	
191-24-2	Benzo(g,h,i)perylene	1.7 U	5.0	1.7	ug/l	
207-08-9	Benzo(k)fluoranthene	1.1 U	5.0	1.1	ug/l	
101-55-3	4-Bromophenyl phenyl ether	1.4 U	5.0	1.4	ug/l	
85-68-7	Butyl benzyl phthalate	1.6 U	5.0	1.6	ug/l	
100-51-6	Benzyl Alcohol	1.3 U	5.0	1.3	ug/l	
91-58-7	2-Chloronaphthalene	1.4 U	5.0	1.4	ug/l	
106-47-8	4-Chloroaniline	4.3 U	5.0	4.3	ug/l	
86-74-8	Carbazole	1.5 U	5.0	1.5	ug/l	
218-01-9	Chrysene	0.98 U	5.0	0.98	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	1.3 U	5.0	1.3	ug/l	
111-44-4	bis(2-Chloroethyl)ether	1.3 U	5.0	1.3	ug/l	

U = Not detected SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MCC-WW10-11-100712	Date Sampled:	07/12/10
Lab Sample ID:	T56085-8	Date Received:	07/12/10
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	US Oil Recovery/400 North Richey, Pasadena, TX		

ABN TCL List

CAS No.	Compound	Result	MQL	SDL	Units	Q
108-60-1	bis(2-Chloroisopropyl)ether	2.0 U	5.0	2.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	1.3 U	5.0	1.3	ug/l	
95-50-1	1,2-Dichlorobenzene	1.3 U	5.0	1.3	ug/l	
541-73-1	1,3-Dichlorobenzene	1.3 U	5.0	1.3	ug/l	
106-46-7	1,4-Dichlorobenzene	1.3 U	5.0	1.3	ug/l	
121-14-2	2,4-Dinitrotoluene	1.4 U	5.0	1.4	ug/l	
606-20-2	2,6-Dinitrotoluene	1.3 U	5.0	1.3	ug/l	
91-94-1	3,3'-Dichlorobenzidine	3.2 U	10	3.2	ug/l	
53-70-3	Dibenzo(a,h)anthracene	1.6 U	5.0	1.6	ug/l	
132-64-9	Dibenzofuran	1.3 U	5.0	1.3	ug/l	
84-74-2	Di-n-butyl phthalate	1.0 U	5.0	1.0	ug/l	
117-84-0	Di-n-octyl phthalate	1.3 U	5.0	1.3	ug/l	
84-66-2	Diethyl phthalate	1.1 U	5.0	1.1	ug/l	
131-11-3	Dimethyl phthalate	1.1 U	5.0	1.1	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	1.8	5.0	1.8	ug/l	J
206-44-0	Fluoranthene	0.97 U	5.0	0.97	ug/l	
86-73-7	Fluorene	1.3 U	5.0	1.3	ug/l	
118-74-1	Hexachlorobenzene	1.3 U	5.0	1.3	ug/l	
87-68-3	Hexachlorobutadiene	1.1 U	5.0	1.1	ug/l	
77-47-4	Hexachlorocyclopentadiene	5.2 U	10	5.2	ug/l	
67-72-1	Hexachloroethane	0.97 U	5.0	0.97	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	1.8 U	5.0	1.8	ug/l	
78-59-1	Isophorone	1.2 U	5.0	1.2	ug/l	
91-57-6	2-Methylnaphthalene	1.3 U	5.0	1.3	ug/l	
88-74-4	2-Nitroaniline	1.4 U	5.0	1.4	ug/l	
99-09-2	3-Nitroaniline	3.3 U	5.0	3.3	ug/l	
100-01-6	4-Nitroaniline	2.3 U	5.0	2.3	ug/l	
91-20-3	Naphthalene	1.1 U	5.0	1.1	ug/l	
98-95-3	Nitrobenzene	1.7 U	5.0	1.7	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	1.4 U	5.0	1.4	ug/l	
86-30-6	N-Nitrosodiphenylamine	1.7 U	5.0	1.7	ug/l	
85-01-8	Phenanthrene	0.97 U	5.0	0.97	ug/l	
129-00-0	Pyrene	1.7 U	5.0	1.7	ug/l	
120-82-1	1,2,4-Trichlorobenzene	1.3 U	5.0	1.3	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	35%		10-66%
4165-62-2	Phenol-d5	18%		10-53%
118-79-6	2,4,6-Tribromophenol	71%		32-128%

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

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3

Client Sample ID:	MCC-WW10-11-100712	Date Sampled:	07/12/10
Lab Sample ID:	T56085-8	Date Received:	07/12/10
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	US Oil Recovery/400 North Richey, Pasadena, TX		

ABN TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	51%		29-115%
321-60-8	2-Fluorobiphenyl	51%		34-113%
1718-51-0	Terphenyl-d14	74%		12-145%

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

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3**Client Sample ID:** MCC-WW10-11-100712**Lab Sample ID:** T56085-8**Date Sampled:** 07/12/10**Matrix:** AQ - Water**Date Received:** 07/12/10**Percent Solids:** n/a**Project:** US Oil Recovery/400 North Richey, Pasadena, TX

Total Metals Analysis

Analyte	Result	MQL	SDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	0.0597 B	0.20	0.012	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Antimony	0.0293	0.0050	0.0010	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Arsenic	0.0010 U	0.0050	0.0010	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Barium	0.101 B	0.20	0.0034	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Beryllium	0.00016 U	0.0050	0.00016	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Cadmium	0.000090 U	0.0040	0.000090	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Calcium	23.0	5.0	0.025	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Chromium	0.00027 U	0.010	0.00027	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Cobalt	0.00022 U	0.050	0.00022	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Copper	0.0059 U	0.025	0.0059	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Iron	0.718	0.10	0.023	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Lead	0.0018 U	0.0030	0.0018	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Magnesium	0.575 B	5.0	0.0079	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Manganese	0.134	0.015	0.0019	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Mercury	0.000094 U	0.00020	0.000094	mg/l	1	07/13/10	07/13/10 CN	SW846 7470A ¹	SW846 7470A ⁴
Nickel	0.0016 B	0.040	0.0014	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Potassium	1.83 B	5.0	0.045	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Selenium	0.0014 B	0.0050	0.00098	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Silver	0.00031 B	0.010	0.00024	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Sodium	4.72 B	5.0	0.10	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Thallium	0.0012 U	0.010	0.0012	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Vanadium	0.00030 U	0.050	0.00030	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³
Zinc	0.0762	0.020	0.0035	mg/l	1	07/13/10	07/13/10 TW	SW846 6010B ²	SW846 3010A ³

(1) Instrument QC Batch: MA4909

(2) Instrument QC Batch: MA4911

(3) Prep QC Batch: MP12270

(4) Prep QC Batch: MP12275

MQL = Method Quantitation Limit

SDL = Sample Detection Limit

U = Indicates a result < SDL

B = Indicates a result > = SDL but < MQL



Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

CHAIN OF CUSTODY RECORD

Site #: 0001100702

Kristie Warr

832-444-7976

T56085
No: 0001-07/12/10-0003

Lab: Accutest Laboratories

Lab Address: 10165 Harwin Drive

Lab Phone: 713-271-4700

Lab #	Sample #	Analyses	Analyses Turnaround Time	Analyses Turnaround Time Units	Matrix	Sample Time	Numb Cont	Container	Preservative	MS/MSD
1	MCC-WW03-11-100712	VOCs	24	Hours	Waste Water	08:50	3	40 ml VOA	HCl	N
1	MCC-WW03-11-100712	Semivolatiles (SVOCs)	24	Hours	Waste Water	08:50	2	1 liter amber		N
1	MCC-WW03-11-100712	TAL Metals/Mercury	24	Hours	Waste Water	08:50	1	500 ml plastic	HNO3	N
2	MCC-WW04-11-100712	VOCs	24	Hours	Waste Water	09:05	3	40 ml VOA	HCl	N
2	MCC-WW04-11-100712	Semivolatiles (SVOCs)	24	Hours	Waste Water	09:05	2	1 liter amber		N
2	MCC-WW04-11-100712	TAL Metals/Mercury	24	Hours	Waste Water	09:05	1	500 ml plastic	HNO3	N
3	MCC-WW05-11-100712	VOCs	24	Hours	Waste Water	09:30	3	40 ml VOA	HCl	N
3	MCC-WW05-11-100712	Semivolatiles (SVOCs)	24	Hours	Waste Water	09:30	2	1 liter amber		N
3	MCC-WW05-11-100712	TAL Metals/Mercury	24	Hours	Waste Water	09:30	1	500 ml plastic	HNO3	N
4	MCC-WW08-11-100712	VOCs	24	Hours	Waste Water	09:55	3	40 ml VOA	HCl	N

Special Instructions: SAMPLE ID: MCC-WW08-11-100712- suspected medium concentration

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time
	Kaper	7/12/10	Thaddeus	7/12/10	1528		Thaddeus	7/12/10	Emily	7/12/10	1615

T56085: Chain of Custody

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U.S Oil Recovery

CHAIN OF CUSTODY RECORD

Site #: 0001100702

Kristie Warr

832-444-7976

T56085

No: 0001-07/12/10-0003

Lab: Accutest Laboratories

Lab Address: 10165 Harwin Drive

Lab Phone: 713-271-4700

Lab #	Sample #	Analyses	Analyses Turnaround Time	Analyses Turnaround Time Units	Matrix	Sample Time	Numb Cont	Container	Preservative	MS/MSD
4	MCC-WW06-11-100712	Semivolatiles (SVOCs)	24	Hours	Waste Water	09:55	2	1 liter amber		N
4	MCC-WW06-11-100712	TAL Metals/Mercury	24	Hours	Waste Water	09:55	1	500 ml plastic	HNO3	N
5	MCC-WW07-12-100712	VOCs	24	Hours	Waste Water	10:20	3	40 ml VOA	HCl	N
5	MCC-WW07-12-100712	Semivolatiles (SVOCs)	24	Hours	Waste Water	10:20	2	1 liter amber		N
5	MCC-WW07-12-100712	TAL Metals/Mercury	24	Hours	Waste Water	10:20	1	500 ml plastic	HNO3	N
6	MCC-WW08-11-100712	VOCs	24	Hours	Waste Water	14:00	3	40 ml VOA	HCl	N
6	MCC-WW08-11-100712	Semivolatiles (SVOCs)	24	Hours	Waste Water	14:00	2	1 liter amber		N
6	MCC-WW08-11-100712	TAL Metals/Mercury	24	Hours	Waste Water	14:00	1	500 ml plastic	HNO3	N
7	MCC-WW09-11-100712	VOCs	24	Hours	Waste Water	14:25	3	40 ml VOA	HCl	N
7	MCC-WW09-11-100712	Semivolatiles (SVOCs)	24	Hours	Waste Water	14:25	2	1 liter amber		N

Special Instructions: SAMPLE ID: MCC-WW08-11-100712- suspected medium concentration

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time
	Rayner	7/12/10	Thaddeus	7/12/10	1528		Thaddeus	7/12/10	K	7/12/10	1615

T56085: Chain of Custody

Page 2 of 6

CHAIN OF CUSTODY RECORD

Site #: 0001100702
Kristie Warr
832-444-7976

TS6085
No: 0001-07/12/10-0003
Lab: Accutest Laboratories
Lab Address: 10165 Harwin Drive
Lab Phone: 713-271-4700

[illegible]

Special Instructions: SAMPLE ID: MCC-WW08-11-100712- suspected medium concentration

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

[illegible]

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4.1 4

Airbill Numbers: _____

TRIP BLANK INFORMATION

- | | |
|--|------------------------------------|
| | Trip Blank on COC but not received |
| | Trip Blank received but not on COC |
| | Trip Blank not intact |
| | Received Water Trip Blank |
| | Received Soil TB |

	Chain of Custody not received
	Sample D/T unclear or missing
	Analyses unclear or missing
	COC not properly executed

Number of Encores? _____
 Number of 5035 kits? _____
 Number of lab-filtered metals? _____

Summary of Discrepancies:

- (1) MCC-WW06-11-100712 - 1 of 3 vials received with headspace equal to passize + MCC-WW06-11-100712 + MCC-WW10-11-100712
- (2) MCC-WW09-11-100712 - 2 of 3 " " " "
- (3) MCC-WW08-11-100712 - 3 of 5 " " " " Larger than passize, Bottle # 6 has a lighter color than Bottle # 5
- (4) MCC-WW09-11-100712 - 3 of 3 " " " " Larger " " " " "darker"

INFORMATION AND SAMPLE LABELING VERIFIED BY:

CORRECTIVE ACTIONS

Client Instructions: Per Derrick Cobb, the difference in color for the 2 uials is ok

SAMPLE RECEIPT LOG

JOB #: T56085 DATE/TIME RECEIVED: 7-12-10 1615
 CLIENT: Weston Solutions INITIALS: EC

COOLER#	SAMPLE ID	FIELD ID	DATE	MATRIX	VOL	BOTTLE #	LOCATION	PRESERV	PH
2	1	MCC-WW03-11-100712	7/12/10	850	W	LAG	1-2	1B	2 3 4 5 6 7 8 <2 >12
	1	↓				500	3	11	1 2 3 4 5 6 7 8 <2 >12
	1	↓				40	4-6	VR	1 2 3 4 5 6 7 8 <2 >12
	2	MCC-WW04-11-100712		905		LAG	1-2	1B	2 3 4 5 6 7 8 <2 >12
	2	↓				500	3	11	1 2 3 4 5 6 7 8 <2 >12
	2	↓				40	4-6	VR	1 2 3 4 5 6 7 8 <2 >12
	3	-WW05		930		LAG	1-2	1B	2 3 4 5 6 7 8 <2 >12
	3	↓				500	3	11	1 2 3 4 5 6 7 8 <2 >12
	3	↓				40	4-6	VR	1 2 3 4 5 6 7 8 <2 >12
	4	-WW06		955		LAG	1-2	1B	2 3 4 5 6 7 8 <2 >12
	4	↓				500	3	11	1 2 3 4 5 6 7 8 <2 >12
	4	↓				40	4-6	VR	1 2 3 4 5 6 7 8 <2 >12
	5	-WW07		1020		LAG	1-2	1B	2 3 4 5 6 7 8 <2 >12
	5	↓				500	3	11	1 2 3 4 5 6 7 8 <2 >12
	5	↓				40	4-6	VR	1 2 3 4 5 6 7 8 <2 >12
	6	-WW08		1400		LAG	1-2	1B	2 3 4 5 6 7 8 <2 >12
	6	↓				500	3	11	1 2 3 4 5 6 7 8 <2 >12
	6	↓				40	4-6	VR	1 2 3 4 5 6 7 8 <2 >12
	7	-WW09		1415		LAG	1-2	1B	2 3 4 5 6 7 8 <2 >12
	7	↓				500	3	11	1 2 3 4 5 6 7 8 <2 >12
	7	↓				40	4-6	VR	1 2 3 4 5 6 7 8 <2 >12

PRESERVATIVES: 1: None 2: HCL 3: HNO3 4: H2SO4 5: NaOH 6: DI 7: MeOH 8: Other
 LOCATION: 1: Walk-In #1 (Waters) 2: Walk-In #2 (Soils) VR: Volatile Fridge M: Metals SUB: Subcontract EF: Encore Freezer
 Rev 8/13/01 ewp

T56085: Chain of Custody
 Page 5 of 6

JOB #: TS6085 DATE/TIME RECEIVED: 7-12-10 1615
CLIENT: Weston Solutions INITIALS: SE

[illegible]

PRESERVATIVES: 1: None 2: HCL 3: HNO3 4: H2SO4 5: NAOH 6: DI 7: MeOH 8: Other ✓
 LOCATION: 1: Walk-In #1 (Waters) 2: Walk-In #2 (Soils) VR: Volatile Fridge M: Metals SUB: Subcontract EF: Encore Freezer
 Rev 8/13/01 ewp

T56085: Chain of Custody
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GC/MS Volatiles

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QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 2

Job Number: T56085

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VF3924-MB	F027229.D	1	07/13/10	RR	n/a	n/a	VF3924

The QC reported here applies to the following samples:

Method: SW846 8260B

T56085-5, T56085-6, T56085-7, T56085-8

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	4.7	50	4.7	ug/l	J
71-43-2	Benzene	ND	2.0	0.50	ug/l	
75-27-4	Bromodichloromethane	ND	2.0	0.49	ug/l	
75-25-2	Bromoform	ND	2.0	1.4	ug/l	
108-90-7	Chlorobenzene	ND	2.0	0.56	ug/l	
75-00-3	Chloroethane	ND	2.0	0.92	ug/l	
67-66-3	Chloroform	ND	2.0	0.64	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.53	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	0.66	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	0.52	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	0.62	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	0.62	ug/l	
124-48-1	Dibromochloromethane	ND	2.0	0.61	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	2.0	0.56	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	0.48	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	2.0	0.45	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	0.68	ug/l	
100-41-4	Ethylbenzene	ND	2.0	0.55	ug/l	
591-78-6	2-Hexanone	ND	10	3.2	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	9.9	ug/l	
74-83-9	Methyl bromide	ND	2.0	0.94	ug/l	
74-87-3	Methyl chloride	ND	2.0	0.84	ug/l	
75-09-2	Methylene chloride	2.0	5.0	0.41	ug/l	J
78-93-3	Methyl ethyl ketone	ND	10	3.9	ug/l	
100-42-5	Styrene	ND	2.0	0.56	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	0.62	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	1.2	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	0.98	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	0.91	ug/l	
108-88-3	Toluene	ND	2.0	0.43	ug/l	
79-01-6	Trichloroethylene	ND	2.0	0.52	ug/l	
75-01-4	Vinyl chloride	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	1.7	ug/l	

Method Blank Summary

Job Number: T56085
Account: RFWTXHO Weston Solutions
Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VF3924-MB	F027229.D	1	07/13/10	RR	n/a	n/a	VF3924

The QC reported here applies to the following samples: Method: SW846 8260B

T56085-5, T56085-6, T56085-7, T56085-8

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	98% 79-122%
17060-07-0	1,2-Dichloroethane-D4	101% 75-121%
2037-26-5	Toluene-D8	110% 87-119%
460-00-4	4-Bromofluorobenzene	120% 80-133%

Method Blank Summary

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Job Number: T56085

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ2939-MB	Z010507.D	1	07/13/10	NM	n/a	n/a	VZ2939

The QC reported here applies to the following samples:

Method: SW846 8260B

T56085-1, T56085-2, T56085-3, T56085-4

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	4.7	ug/l	
71-43-2	Benzene	ND	2.0	0.50	ug/l	
75-27-4	Bromodichloromethane	ND	2.0	0.49	ug/l	
75-25-2	Bromoform	ND	2.0	1.4	ug/l	
108-90-7	Chlorobenzene	ND	2.0	0.56	ug/l	
75-00-3	Chloroethane	ND	2.0	0.92	ug/l	
67-66-3	Chloroform	ND	2.0	0.64	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.53	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	0.66	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	0.52	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	0.62	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	0.62	ug/l	
124-48-1	Dibromochloromethane	ND	2.0	0.61	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	2.0	0.56	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	0.48	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	2.0	0.45	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	0.68	ug/l	
100-41-4	Ethylbenzene	ND	2.0	0.55	ug/l	
591-78-6	2-Hexanone	ND	10	3.2	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	9.9	ug/l	
74-83-9	Methyl bromide	ND	2.0	0.94	ug/l	
74-87-3	Methyl chloride	ND	2.0	0.84	ug/l	
75-09-2	Methylene chloride	ND	5.0	0.41	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	3.9	ug/l	
100-42-5	Styrene	ND	2.0	0.56	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	0.62	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	1.2	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	0.98	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	0.91	ug/l	
108-88-3	Toluene	ND	2.0	0.43	ug/l	
79-01-6	Trichloroethylene	ND	2.0	0.52	ug/l	
75-01-4	Vinyl chloride	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	1.7	ug/l	

Method Blank Summary

Job Number: T56085
Account: RFWTXHO Weston Solutions
Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ2939-MB	Z010507.D	1	07/13/10	NM	n/a	n/a	VZ2939

The QC reported here applies to the following samples: Method: SW846 8260B

T56085-1, T56085-2, T56085-3, T56085-4

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	105% 79-122%
17060-07-0	1,2-Dichloroethane-D4	104% 75-121%
2037-26-5	Toluene-D8	101% 87-119%
460-00-4	4-Bromofluorobenzene	92% 80-133%

Method Blank Summary

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Job Number: T56085

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX628-MB	X0063354.D	1	07/14/10	NM	n/a	n/a	VX628

The QC reported here applies to the following samples:

Method: SW846 8260B

T56085-6, T56085-7

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	4.7	ug/l	
71-43-2	Benzene	ND	2.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	0.62	ug/l	
100-41-4	Ethylbenzene	ND	2.0	0.55	ug/l	
108-88-3	Toluene	ND	2.0	0.43	ug/l	
1330-20-7	Xylene (total)	ND	6.0	1.7	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	93%	79-122%
17060-07-0	1,2-Dichloroethane-D4	89%	75-121%
2037-26-5	Toluene-D8	98%	87-119%
460-00-4	4-Bromofluorobenzene	88%	80-133%

5.1.3

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Blank Spike Summary

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Job Number: T56085

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VF3924-BS	F027228.D	1	07/13/10	RR	n/a	n/a	VF3924

The QC reported here applies to the following samples:

Method: SW846 8260B

T56085-5, T56085-6, T56085-7, T56085-8

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	120	96	62-124
71-43-2	Benzene	25	22.5	90	76-118
75-27-4	Bromodichloromethane	25	21.7	87	68-107
75-25-2	Bromoform	25	23.1	92	64-103
108-90-7	Chlorobenzene	25	23.5	94	74-111
75-00-3	Chloroethane	25	19.7	79	75-135
67-66-3	Chloroform	25	22.4	90	75-117
75-15-0	Carbon disulfide	25	25.2	101	57-126
56-23-5	Carbon tetrachloride	25	24.7	99	75-125
75-34-3	1,1-Dichloroethane	25	23.2	93	76-121
75-35-4	1,1-Dichloroethylene	25	25.5	102	71-128
107-06-2	1,2-Dichloroethane	25	21.9	88	70-111
78-87-5	1,2-Dichloropropane	25	22.7	91	71-113
124-48-1	Dibromochloromethane	25	23.5	94	69-104
156-59-2	cis-1,2-Dichloroethylene	25	22.9	92	68-113
10061-01-5	cis-1,3-Dichloropropene	25	22.6	90	71-111
156-60-5	trans-1,2-Dichloroethylene	25	23.6	94	70-125
10061-02-6	trans-1,3-Dichloropropene	25	25.2	101	75-111
100-41-4	Ethylbenzene	25	23.9	96	75-112
591-78-6	2-Hexanone	125	121	97	60-113
108-10-1	4-Methyl-2-pentanone	125	114	91	63-115
74-83-9	Methyl bromide	25	19.5	78	59-132
74-87-3	Methyl chloride	25	20.5	82	56-150
75-09-2	Methylene chloride	25	24.5	98	70-113
78-93-3	Methyl ethyl ketone	125	122	98	62-117
100-42-5	Styrene	25	22.8	91	66-100
71-55-6	1,1,1-Trichloroethane	25	23.4	94	76-125
79-34-5	1,1,2,2-Tetrachloroethane	25	24.3	97	67-110
79-00-5	1,1,2-Trichloroethane	25	22.8	91	69-107
127-18-4	Tetrachloroethylene	25	24.4	98	77-120
108-88-3	Toluene	25	23.7	95	77-114
79-01-6	Trichloroethylene	25	22.8	91	74-117
75-01-4	Vinyl chloride	25	20.8	83	64-121
1330-20-7	Xylene (total)	75	71.9	96	75-111

Blank Spike Summary

Job Number: T56085
Account: RFWTXHO Weston Solutions
Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VF3924-BS	F027228.D	1	07/13/10	RR	n/a	n/a	VF3924

The QC reported here applies to the following samples: Method: SW846 8260B

T56085-5, T56085-6, T56085-7, T56085-8

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	96%	79-122%
17060-07-0	1,2-Dichloroethane-D4	100%	75-121%
2037-26-5	Toluene-D8	107%	87-119%
460-00-4	4-Bromofluorobenzene	112%	80-133%

Blank Spike Summary

Page 1 of 2

Job Number: T56085

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ2939-BS	Z010504.D	1	07/13/10	NM	n/a	n/a	VZ2939

The QC reported here applies to the following samples:

Method: SW846 8260B

T56085-1, T56085-2, T56085-3, T56085-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	114	91	62-124
71-43-2	Benzene	25	25.7	103	76-118
75-27-4	Bromodichloromethane	25	25.0	100	68-107
75-25-2	Bromoform	25	21.0	84	64-103
108-90-7	Chlorobenzene	25	22.8	91	74-111
75-00-3	Chloroethane	25	24.5	98	75-135
67-66-3	Chloroform	25	25.9	104	75-117
75-15-0	Carbon disulfide	25	27.5	110	57-126
56-23-5	Carbon tetrachloride	25	27.8	111	75-125
75-34-3	1,1-Dichloroethane	25	27.0	108	76-121
75-35-4	1,1-Dichloroethylene	25	24.9	100	71-128
107-06-2	1,2-Dichloroethane	25	24.3	97	70-111
78-87-5	1,2-Dichloropropane	25	25.3	101	71-113
124-48-1	Dibromochloromethane	25	22.7	91	69-104
156-59-2	cis-1,2-Dichloroethylene	25	27.6	110	68-113
10061-01-5	cis-1,3-Dichloropropene	25	25.9	104	71-111
156-60-5	trans-1,2-Dichloroethylene	25	26.3	105	70-125
10061-02-6	trans-1,3-Dichloropropene	25	23.0	92	75-111
100-41-4	Ethylbenzene	25	23.9	96	75-112
591-78-6	2-Hexanone	125	107	86	60-113
108-10-1	4-Methyl-2-pentanone	125	117	94	63-115
74-83-9	Methyl bromide	25	22.8	91	59-132
74-87-3	Methyl chloride	25	24.2	97	56-150
75-09-2	Methylene chloride	25	23.5	94	70-113
78-93-3	Methyl ethyl ketone	125	129	103	62-117
100-42-5	Styrene	25	21.8	87	66-100
71-55-6	1,1,1-Trichloroethane	25	26.0	104	76-125
79-34-5	1,1,2,2-Tetrachloroethane	25	22.4	90	67-110
79-00-5	1,1,2-Trichloroethane	25	21.4	86	69-107
127-18-4	Tetrachloroethylene	25	25.1	100	77-120
108-88-3	Toluene	25	23.5	94	77-114
79-01-6	Trichloroethylene	25	27.3	109	74-117
75-01-4	Vinyl chloride	25	24.6	98	64-121
1330-20-7	Xylene (total)	75	70.0	93	75-111

Blank Spike Summary

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Job Number: T56085

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ2939-BS	Z010504.D	1	07/13/10	NM	n/a	n/a	VZ2939

The QC reported here applies to the following samples:

Method: SW846 8260B

T56085-1, T56085-2, T56085-3, T56085-4

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	111%	79-122%
17060-07-0	1,2-Dichloroethane-D4	107%	75-121%
2037-26-5	Toluene-D8	103%	87-119%
460-00-4	4-Bromofluorobenzene	98%	80-133%

5.2.2

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Blank Spike Summary

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Job Number: T56085

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX628-BS	X0063352.D	1	07/14/10	NM	n/a	n/a	VX628

The QC reported here applies to the following samples:

Method: SW846 8260B

T56085-6, T56085-7

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	121	97	62-124
71-43-2	Benzene	25	21.3	85	76-118
107-06-2	1,2-Dichloroethane	25	20.8	83	70-111
100-41-4	Ethylbenzene	25	21.1	84	75-112
108-88-3	Toluene	25	24.5	98	77-114
1330-20-7	Xylene (total)	75	62.5	83	75-111

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	96%	79-122%
17060-07-0	1,2-Dichloroethane-D4	90%	75-121%
2037-26-5	Toluene-D8	101%	87-119%
460-00-4	4-Bromofluorobenzene	90%	80-133%

5.2.3

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Matrix Spike/Matrix Spike Duplicate Summary

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Job Number: T56085

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T55556-15MS	F027232.D	2000	07/13/10	RR	n/a	n/a	VF3924
T55556-15MSD	F027233.D	2000	07/13/10	RR	n/a	n/a	VF3924
T55556-15	F027231.D	2000	07/13/10	RR	n/a	n/a	VF3924

The QC reported here applies to the following samples:

Method: SW846 8260B

T56085-5, T56085-6, T56085-7, T56085-8

CAS No.	Compound	T55556-15 ug/l	Spike Q	ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND		250000	248000	99	248000	99	0	62-124/21
71-43-2	Benzene	ND		50000	46700	93	46200	92	1	76-118/16
75-27-4	Bromodichloromethane	ND		50000	44700	89	44300	89	1	68-107/12
75-25-2	Bromoform	ND		50000	46500	93	47800	96	3	64-103/14
108-90-7	Chlorobenzene	ND		50000	48600	97	48900	98	1	74-111/11
75-00-3	Chloroethane	ND		50000	38300	77	37900	76	1	75-135/15
67-66-3	Chloroform	ND		50000	45700	91	44600	89	2	75-117/12
75-15-0	Carbon disulfide	ND		50000	56300	113	55600	111	1	57-126/13
56-23-5	Carbon tetrachloride	ND		50000	51400	103	50600	101	2	75-125/12
75-34-3	1,1-Dichloroethane	ND		50000	47700	95	47000	94	1	76-121/13
75-35-4	1,1-Dichloroethylene	1610	J	50000	53900	105	52300	101	3	71-128/19
107-06-2	1,2-Dichloroethane	7640		50000	51900	89	50600	86	3	70-111/14
78-87-5	1,2-Dichloropropane	ND		50000	46400	93	46000	92	1	71-113/12
124-48-1	Dibromochloromethane	ND		50000	48200	96	48400	97	0	69-104/12
156-59-2	cis-1,2-Dichloroethylene	202000		50000	225000	46* a	222000	40* a	1	68-113/13
10061-01-5	cis-1,3-Dichloropropene	ND		50000	46800	94	45700	91	2	71-111/12
156-60-5	trans-1,2-Dichloroethylene	8800		50000	56300	95	54700	92	3	70-125/14
10061-02-6	trans-1,3-Dichloropropene	ND		50000	51700	103	51400	103	1	75-111/12
100-41-4	Ethylbenzene	ND		50000	49100	98	49500	99	1	75-112/12
591-78-6	2-Hexanone	ND		250000	233000	93	238000	95	2	60-113/18
108-10-1	4-Methyl-2-pentanone	ND		250000	225000	90	226000	90	0	63-115/21
74-83-9	Methyl bromide	ND		50000	39100	78	38800	78	1	59-132/15
74-87-3	Methyl chloride	ND		50000	39600	79	38200	76	4	56-150/17
75-09-2	Methylene chloride	ND		50000	50200	100	50000	100	0	70-113/13
78-93-3	Methyl ethyl ketone	ND		250000	231000	92	212000	85	9	62-117/21
100-42-5	Styrene	ND		50000	46800	94	46900	94	0	66-100/11
71-55-6	1,1,1-Trichloroethane	ND		50000	48600	97	47300	95	3	76-125/11
79-34-5	1,1,2,2-Tetrachloroethane	ND		50000	48900	98	48700	97	0	67-110/20
79-00-5	1,1,2-Trichloroethane	ND		50000	47100	94	47200	94	0	69-107/14
127-18-4	Tetrachloroethylene	2010	J	50000	53100	102	54400	105	2	77-120/13
108-88-3	Toluene	ND		50000	49100	98	48900	98	0	77-114/12
79-01-6	Trichloroethylene	78100		50000	119000	82	117000	78	2	74-117/12
75-01-4	Vinyl chloride	6570		50000	46500	80	45600	78	2	64-121/19
1330-20-7	Xylene (total)	ND		150000	149000	99	148000	99	1	75-111/12

Matrix Spike/Matrix Spike Duplicate Summary

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Job Number: T56085

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T55556-15MS	F027232.D	2000	07/13/10	RR	n/a	n/a	VF3924
T55556-15MSD	F027233.D	2000	07/13/10	RR	n/a	n/a	VF3924
T55556-15	F027231.D	2000	07/13/10	RR	n/a	n/a	VF3924

The QC reported here applies to the following samples:

Method: SW846 8260B

T56085-5, T56085-6, T56085-7, T56085-8

CAS No.	Surrogate Recoveries	MS	MSD	T55556-15	Limits
1868-53-7	Dibromofluoromethane	97%	95%	97%	79-122%
17060-07-0	1,2-Dichloroethane-D4	100%	98%	103%	75-121%
2037-26-5	Toluene-D8	106%	107%	110%	87-119%
460-00-4	4-Bromofluorobenzene	112%	112%	120%	80-133%

(a) Outside control limits due to high level in sample relative to spike amount.

5.3.1

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Matrix Spike/Matrix Spike Duplicate Summary

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Job Number: T56085

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T55754-4MS	Z010511.D	5	07/13/10	NM	n/a	n/a	VZ2939
T55754-4MSD	Z010512.D	5	07/13/10	NM	n/a	n/a	VZ2939
T55754-4	Z010510.D	5	07/13/10	NM	n/a	n/a	VZ2939

The QC reported here applies to the following samples:

Method: SW846 8260B

T56085-1, T56085-2, T56085-3, T56085-4

CAS No.	Compound	T55754-4 ug/l	Spike Q	ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND		625	574	92	584	93	2	62-124/21
71-43-2	Benzene	242		125	361	95	354	90	2	76-118/16
75-27-4	Bromodichloromethane	ND		125	137	110*	138	110*	1	68-107/12
75-25-2	Bromoform	ND		125	114	91	115	92	1	64-103/14
108-90-7	Chlorobenzene	ND		125	124	99	123	98	1	74-111/11
75-00-3	Chloroethane	ND		125	112	90	117	94	4	75-135/15
67-66-3	Chloroform	ND		125	141	113	136	109	4	75-117/12
75-15-0	Carbon disulfide	ND		125	151	121	157	126	4	57-126/13
56-23-5	Carbon tetrachloride	ND		125	151	121	144	115	5	75-125/12
75-34-3	1,1-Dichloroethane	ND		125	140	112	135	108	4	76-121/13
75-35-4	1,1-Dichloroethylene	ND		125	143	114	147	118	3	71-128/19
107-06-2	1,2-Dichloroethane	ND		125	132	106	132	106	0	70-111/14
78-87-5	1,2-Dichloropropane	ND		125	140	112	141	113	1	71-113/12
124-48-1	Dibromochloromethane	ND		125	122	98	121	97	1	69-104/12
156-59-2	cis-1,2-Dichloroethylene	ND		125	142	114*	147	118*	3	68-113/13
10061-01-5	cis-1,3-Dichloropropene	ND		125	137	110	140	112*	2	71-111/12
156-60-5	trans-1,2-Dichloroethylene	ND		125	140	112	138	110	1	70-125/14
10061-02-6	trans-1,3-Dichloropropene	ND		125	124	99	121	97	2	75-111/12
100-41-4	Ethylbenzene	ND		125	128	102	122	98	5	75-112/12
591-78-6	2-Hexanone	ND		625	568	91	575	92	1	60-113/18
108-10-1	4-Methyl-2-pentanone	ND		625	683	109	689	110	1	63-115/21
74-83-9	Methyl bromide	ND		125	98.7	79	102	82	3	59-132/15
74-87-3	Methyl chloride	ND		125	108	86	115	92	6	56-150/17
75-09-2	Methylene chloride	ND		125	134	107	141	113	5	70-113/13
78-93-3	Methyl ethyl ketone	ND		625	658	105	644	103	2	62-117/21
100-42-5	Styrene	ND		125	119	95	115	92	3	66-100/11
71-55-6	1,1,1-Trichloroethane	ND		125	142	114	141	113	1	76-125/11
79-34-5	1,1,2,2-Tetrachloroethane	ND		125	119	95	117	94	2	67-110/20
79-00-5	1,1,2-Trichloroethane	ND		125	114	91	114	91	0	69-107/14
127-18-4	Tetrachloroethylene	6.3	J	125	135	103	128	97	5	77-120/13
108-88-3	Toluene	ND		125	123	98	120	96	2	77-114/12
79-01-6	Trichloroethylene	12.2		125	152	112	146	107	4	74-117/12
75-01-4	Vinyl chloride	ND		125	121	97	120	96	1	64-121/19
1330-20-7	Xylene (total)	ND		375	382	102	361	96	6	75-111/12

Matrix Spike/Matrix Spike Duplicate Summary

Page 2 of 2

Job Number: T56085

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T55754-4MS	Z010511.D	5	07/13/10	NM	n/a	n/a	VZ2939
T55754-4MSD	Z010512.D	5	07/13/10	NM	n/a	n/a	VZ2939
T55754-4	Z010510.D	5	07/13/10	NM	n/a	n/a	VZ2939

The QC reported here applies to the following samples:

Method: SW846 8260B

T56085-1, T56085-2, T56085-3, T56085-4

CAS No.	Surrogate Recoveries	MS	MSD	T55754-4	Limits
1868-53-7	Dibromofluoromethane	112%	104%	114%	79-122%
17060-07-0	1,2-Dichloroethane-D4	107%	101%	111%	75-121%
2037-26-5	Toluene-D8	102%	96%	104%	87-119%
460-00-4	4-Bromofluorobenzene	97%	92%	96%	80-133%

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: T56085

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T56085-7MS	X0063356.D	1	07/14/10	NM	n/a	n/a	VX628
T56085-7MSD	X0063357.D	1	07/14/10	NM	n/a	n/a	VX628
T56085-7 ^a	X0063355.D	1	07/14/10	NM	n/a	n/a	VX628

The QC reported here applies to the following samples:

Method: SW846 8260B

T56085-6, T56085-7

CAS No.	Compound	T56085-7 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	70.9	125	219	118	268	158*	20	62-124/21
71-43-2	Benzene	2.0 U	25	23.6	94	21.6	86	9	76-118/16
107-06-2	1,2-Dichloroethane	2.0 U	25	23.6	94	21.6	86	9	70-111/14
100-41-4	Ethylbenzene	2.0 U	25	36.0	144*	34.3	137*	5	75-112/12
108-88-3	Toluene	2.0 U	25	24.6	98	23.1	92	6	77-114/12
1330-20-7	Xylene (total)	6.0 U	75	68.2	91	66.1	88	3	75-111/12

CAS No.	Surrogate Recoveries	MS	MSD	T56085-7	Limits
1868-53-7	Dibromofluoromethane	101%	94%	97%	79-122%
17060-07-0	1,2-Dichloroethane-D4	96%	89%	89%	75-121%
2037-26-5	Toluene-D8	96%	93%	86%*	87-119%
460-00-4	4-Bromofluorobenzene	95%	110%	89%	80-133%

(a) Sample reported for QC purposes only.



GC/MS Semi-volatiles



QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 3

Job Number: T56085

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP15356-MB	W349.D	1	07/13/10	GJ	07/13/10	OP15356	EW19

The QC reported here applies to the following samples:

Method: SW846 8270C

T56085-1, T56085-2, T56085-3, T56085-4, T56085-5, T56085-6, T56085-7, T56085-8

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	10	5.0	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	1.2	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.0	1.2	ug/l	
120-83-2	2,4-Dichlorophenol	ND	5.0	2.2	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.0	1.3	ug/l	
51-28-5	2,4-Dinitrophenol	ND	25	15	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	1.4	ug/l	
95-48-7	2-Methylphenol	ND	5.0	0.83	ug/l	
	3&4-Methylphenol	ND	5.0	1.6	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	2.0	ug/l	
100-02-7	4-Nitrophenol	ND	25	6.7	ug/l	
87-86-5	Pentachlorophenol	ND	25	13	ug/l	
108-95-2	Phenol	ND	5.0	0.75	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.0	1.2	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	1.1	ug/l	
83-32-9	Acenaphthene	ND	5.0	1.6	ug/l	
208-96-8	Acenaphthylene	ND	5.0	1.2	ug/l	
120-12-7	Anthracene	ND	5.0	1.1	ug/l	
56-55-3	Benzo(a)anthracene	ND	5.0	1.1	ug/l	
50-32-8	Benzo(a)pyrene	ND	5.0	1.1	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	5.0	0.87	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	5.0	1.7	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	5.0	1.1	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	1.4	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	1.6	ug/l	
100-51-6	Benzyl Alcohol	ND	5.0	1.3	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	1.4	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	4.3	ug/l	
86-74-8	Carbazole	ND	5.0	1.5	ug/l	
218-01-9	Chrysene	ND	5.0	0.98	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	1.3	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	1.3	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	2.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	1.3	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	5.0	1.3	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	5.0	1.3	ug/l	

Method Blank Summary

Page 2 of 3

Job Number: T56085
Account: RFWTXHO Weston Solutions
Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP15356-MB	W349.D	1	07/13/10	GJ	07/13/10	OP15356	EW19

The QC reported here applies to the following samples:

Method: SW846 8270C

T56085-1, T56085-2, T56085-3, T56085-4, T56085-5, T56085-6, T56085-7, T56085-8

CAS No.	Compound	Result	RL	MDL	Units	Q
106-46-7	1,4-Dichlorobenzene	ND	5.0	1.3	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	5.0	1.4	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	5.0	1.3	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	10	3.2	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	5.0	1.6	ug/l	
132-64-9	Dibenzofuran	ND	5.0	1.3	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.0	1.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	1.3	ug/l	
84-66-2	Diethyl phthalate	ND	5.0	1.1	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	1.1	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	5.0	1.8	ug/l	
206-44-0	Fluoranthene	ND	5.0	0.97	ug/l	
86-73-7	Fluorene	ND	5.0	1.3	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	1.3	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	1.1	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	5.2	ug/l	
67-72-1	Hexachloroethane	ND	5.0	0.97	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	5.0	1.8	ug/l	
78-59-1	Isophorone	ND	5.0	1.2	ug/l	
91-57-6	2-Methylnaphthalene	ND	5.0	1.3	ug/l	
88-74-4	2-Nitroaniline	ND	5.0	1.4	ug/l	
99-09-2	3-Nitroaniline	ND	5.0	3.3	ug/l	
100-01-6	4-Nitroaniline	ND	5.0	2.3	ug/l	
91-20-3	Naphthalene	ND	5.0	1.1	ug/l	
98-95-3	Nitrobenzene	ND	5.0	1.7	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	1.4	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	1.7	ug/l	
85-01-8	Phenanthrene	ND	5.0	0.97	ug/l	
129-00-0	Pyrene	ND	5.0	1.7	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	1.3	ug/l	

CAS No.	Surrogate Recoveries	Limits
367-12-4	2-Fluorophenol	44% 10-66%
4165-62-2	Phenol-d5	33% 10-53%

Method Blank Summary

Job Number: T56085
Account: RFWTXHO Weston Solutions
Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP15356-MB	W349.D	1	07/13/10	GJ	07/13/10	OP15356	EW19

The QC reported here applies to the following samples: Method: SW846 8270C

T56085-1, T56085-2, T56085-3, T56085-4, T56085-5, T56085-6, T56085-7, T56085-8

CAS No.	Surrogate Recoveries	Limits
118-79-6	2,4,6-Tribromophenol	73% 32-128%
4165-60-0	Nitrobenzene-d5	72% 29-115%
321-60-8	2-Fluorobiphenyl	77% 34-113%
1718-51-0	Terphenyl-d14	87% 12-145%

Blank Spike Summary

Page 1 of 3

Job Number: T56085

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP15356-BS	W350.D	1	07/13/10	GJ	07/13/10	OP15356	EW19

The QC reported here applies to the following samples:

Method: SW846 8270C

T56085-1, T56085-2, T56085-3, T56085-4, T56085-5, T56085-6, T56085-7, T56085-8

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
65-85-0	Benzoic Acid	50	17.1	34	10-68
95-57-8	2-Chlorophenol	50	34.8	70	39-93
59-50-7	4-Chloro-3-methyl phenol	50	41.0	82	43-109
120-83-2	2,4-Dichlorophenol	50	40.2	80	42-106
105-67-9	2,4-Dimethylphenol	50	35.7	71	27-87
51-28-5	2,4-Dinitrophenol	50	37.9	76	43-107
534-52-1	4,6-Dinitro-o-cresol	50	50.0	100	47-112
95-48-7	2-Methylphenol	50	32.5	65	25-84
	3&4-Methylphenol	100	65.2	65	25-77
88-75-5	2-Nitrophenol	50	38.8	78	38-96
100-02-7	4-Nitrophenol	50	19.2	38	13-70
87-86-5	Pentachlorophenol	50	43.0	86	46-153
108-95-2	Phenol	50	21.0	42	10-53
95-95-4	2,4,5-Trichlorophenol	50	43.8	88	40-101
88-06-2	2,4,6-Trichlorophenol	50	40.4	81	41-102
83-32-9	Acenaphthene	50	34.9	70	41-110
208-96-8	Acenaphthylene	50	36.9	74	49-113
120-12-7	Anthracene	50	44.0	88	59-105
56-55-3	Benzo(a)anthracene	50	41.9	84	64-112
50-32-8	Benzo(a)pyrene	50	39.5	79	62-116
205-99-2	Benzo(b)fluoranthene	50	39.7	79	62-114
191-24-2	Benzo(g,h,i)perylene	50	46.0	92	55-124
207-08-9	Benzo(k)fluoranthene	50	57.4	115	62-119
101-55-3	4-Bromophenyl phenyl ether	50	41.5	83	56-99
85-68-7	Butyl benzyl phthalate	50	45.0	90	52-125
100-51-6	Benzyl Alcohol	50	36.2	72	28-83
91-58-7	2-Chloronaphthalene	50	29.2	58	42-97
106-47-8	4-Chloroaniline	50	43.2	86	37-128
86-74-8	Carbazole	50	42.1	84	59-142
218-01-9	Chrysene	50	41.9	84	67-112
111-91-1	bis(2-Chloroethoxy)methane	50	29.7	59	38-96
111-44-4	bis(2-Chloroethyl)ether	50	32.6	65	37-91
108-60-1	bis(2-Chloroisopropyl)ether	50	28.3	57	36-102
7005-72-3	4-Chlorophenyl phenyl ether	50	39.8	80	48-101
95-50-1	1,2-Dichlorobenzene	50	29.5	59	33-86
541-73-1	1,3-Dichlorobenzene	50	27.7	55	21-88

Blank Spike Summary

Page 2 of 3

Job Number: T56085

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP15356-BS	W350.D	1	07/13/10	GJ	07/13/10	OP15356	EW19

The QC reported here applies to the following samples:

Method: SW846 8270C

T56085-1, T56085-2, T56085-3, T56085-4, T56085-5, T56085-6, T56085-7, T56085-8

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
106-46-7	1,4-Dichlorobenzene	50	28.3	57	31-86
121-14-2	2,4-Dinitrotoluene	50	43.3	87	55-112
606-20-2	2,6-Dinitrotoluene	50	43.4	87	57-105
91-94-1	3,3'-Dichlorobenzidine	50	27.9	56	50-142
53-70-3	Dibenzo(a,h)anthracene	50	46.8	94	55-123
132-64-9	Dibenzofuran	50	36.9	74	45-99
84-74-2	Di-n-butyl phthalate	50	45.2	90	64-114
117-84-0	Di-n-octyl phthalate	50	51.0	102	55-118
84-66-2	Diethyl phthalate	50	43.1	86	52-113
131-11-3	Dimethyl phthalate	50	42.5	85	38-112
117-81-7	bis(2-Ethylhexyl)phthalate	50	49.0	98	56-131
206-44-0	Fluoranthene	50	45.1	90	62-116
86-73-7	Fluorene	50	39.7	79	47-99
118-74-1	Hexachlorobenzene	50	41.5	83	62-102
87-68-3	Hexachlorobutadiene	50	28.7	57	37-91
77-47-4	Hexachlorocyclopentadiene	50	35.3	71	23-102
67-72-1	Hexachloroethane	50	29.8	60	33-86
193-39-5	Indeno(1,2,3-cd)pyrene	50	46.2	92	52-126
78-59-1	Isophorone	50	37.4	75	42-105
91-57-6	2-Methylnaphthalene	50	31.3	63	36-91
88-74-4	2-Nitroaniline	50	39.6	79	49-109
99-09-2	3-Nitroaniline	50	40.6	81	46-139
100-01-6	4-Nitroaniline	50	39.4	79	73-174
91-20-3	Naphthalene	50	31.6	63	37-89
98-95-3	Nitrobenzene	50	36.6	73	42-97
621-64-7	N-Nitroso-di-n-propylamine	50	43.4	87	42-102
86-30-6	N-Nitrosodiphenylamine	50	36.7	73	64-119
85-01-8	Phenanthrene	50	42.4	85	59-103
129-00-0	Pyrene	50	41.5	83	58-110
120-82-1	1,2,4-Trichlorobenzene	50	28.5	57	37-88

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	48%	10-66%
4165-62-2	Phenol-d5	36%	10-53%

Blank Spike Summary

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Job Number: T56085

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP15356-BS	W350.D	1	07/13/10	GJ	07/13/10	OP15356	EW19

The QC reported here applies to the following samples:

Method: SW846 8270C

T56085-1, T56085-2, T56085-3, T56085-4, T56085-5, T56085-6, T56085-7, T56085-8

CAS No.	Surrogate Recoveries	BSP	Limits
118-79-6	2,4,6-Tribromophenol	77%	32-128%
4165-60-0	Nitrobenzene-d5	71%	29-115%
321-60-8	2-Fluorobiphenyl	75%	34-113%
1718-51-0	Terphenyl-d14	81%	12-145%

6.2.1

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Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 3

Job Number: T56085

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP15356-MS	W366.D	1	07/13/10	GJ	07/13/10	OP15356	EW19
OP15356-MSD	W367.D	1	07/13/10	GJ	07/13/10	OP15356	EW19
T56088-1	W364.D	1	07/13/10	GJ	07/13/10	OP15356	EW19

The QC reported here applies to the following samples:

Method: SW846 8270C

T56085-1, T56085-2, T56085-3, T56085-4, T56085-5, T56085-6, T56085-7, T56085-8

CAS No.	Compound	T56088-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic Acid	10 U		50	23.0	46	25.0	50	8	10-68/27
95-57-8	2-Chlorophenol	5.0 U		50	32.9	66	35.4	71	7	39-93/28
59-50-7	4-Chloro-3-methyl phenol	5.0 U		50	37.6	75	40.0	80	6	43-109/28
120-83-2	2,4-Dichlorophenol	5.0 U		50	37.5	75	39.9	80	6	42-106/25
105-67-9	2,4-Dimethylphenol	5.0 U		50	35.1	70	37.2	74	6	27-87/26
51-28-5	2,4-Dinitrophenol	25 U		50	41.8	84	44.4	89	6	43-107/44
534-52-1	4,6-Dinitro-o-cresol	10 U		50	48.8	98	51.7	103	6	47-112/24
95-48-7	2-Methylphenol	5.0 U		50	30.9	62	32.6	65	5	25-84/31
	3&4-Methylphenol	5.0 U		100	61.0	61	65.0	65	6	25-77/25
88-75-5	2-Nitrophenol	5.0 U		50	36.5	73	39.2	78	7	38-96/26
100-02-7	4-Nitrophenol	25 U		50	18.4	37	19.6	39	6	13-70/25
87-86-5	Pentachlorophenol	25 U		50	43.3	87	45.9	92	6	46-153/18
108-95-2	Phenol	5.0 U		50	18.9	38	20.2	40	7	10-53/35
95-95-4	2,4,5-Trichlorophenol	5.0 U		50	40.1	80	42.1	84	5	40-101/22
88-06-2	2,4,6-Trichlorophenol	5.0 U		50	36.8	74	38.5	77	5	41-102/22
83-32-9	Acenaphthene	5.0 U		50	35.9	72	37.8	76	5	41-110/21
208-96-8	Acenaphthylene	5.0 U		50	37.3	75	39.0	78	4	49-113/23
120-12-7	Anthracene	5.0 U		50	40.8	82	42.8	86	5	59-105/18
56-55-3	Benzo(a)anthracene	5.0 U		50	38.4	77	39.8	80	4	64-112/20
50-32-8	Benzo(a)pyrene	5.0 U		50	35.8	72	37.4	75	4	62-116/23
205-99-2	Benzo(b)fluoranthene	5.0 U		50	38.0	76	40.0	80	5	62-114/22
191-24-2	Benzo(g,h,i)perylene	5.0 U		50	37.5	75	40.3	81	7	55-124/36
207-08-9	Benzo(k)fluoranthene	5.0 U		50	52.7	105	55.8	112	6	62-119/30
101-55-3	4-Bromophenyl phenyl ether	5.0 U		50	41.3	83	42.4	85	3	56-99/20
85-68-7	Butyl benzyl phthalate	5.0 U		50	43.4	87	43.9	88	1	52-125/25
100-51-6	Benzyl Alcohol	5.0 U		50	30.0	60	32.4	65	8	28-83/32
91-58-7	2-Chloronaphthalene	5.0 U		50	31.5	63	32.8	66	4	42-97/27
106-47-8	4-Chloroaniline	5.0 U		50	30.8	62	33.1	66	7	37-128/29
86-74-8	Carbazole	5.0 U		50	38.4	77	39.6	79	3	59-142/19
218-01-9	Chrysene	5.0 U		50	38.5	77	40.1	80	4	67-112/19
111-91-1	bis(2-Chloroethoxy)methane	5.0 U		50	27.7	55	29.4	59	6	38-96/30
111-44-4	bis(2-Chloroethyl)ether	5.0 U		50	30.7	61	33.1	66	8	37-91/33
108-60-1	bis(2-Chloroisopropyl)ether	5.0 U		50	29.0	58	30.9	62	6	36-102/32
7005-72-3	4-Chlorophenyl phenyl ether	5.0 U		50	39.3	79	41.2	82	5	48-101/21
95-50-1	1,2-Dichlorobenzene	5.0 U		50	32.8	66	35.3	71	7	33-86/29
541-73-1	1,3-Dichlorobenzene	5.0 U		50	30.8	62	32.7	65	6	32-88/32

Matrix Spike/Matrix Spike Duplicate Summary

Page 2 of 3

Job Number: T56085

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP15356-MS	W366.D	1	07/13/10	GJ	07/13/10	OP15356	EW19
OP15356-MSD	W367.D	1	07/13/10	GJ	07/13/10	OP15356	EW19
T56088-1	W364.D	1	07/13/10	GJ	07/13/10	OP15356	EW19

The QC reported here applies to the following samples:

Method: SW846 8270C

T56085-1, T56085-2, T56085-3, T56085-4, T56085-5, T56085-6, T56085-7, T56085-8

CAS No.	Compound	T56088-1 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
106-46-7	1,4-Dichlorobenzene	5.0 U	50	31.5	63	33.7	67	7	31-86/36
121-14-2	2,4-Dinitrotoluene	5.0 U	50	39.7	79	41.7	83	5	55-112/23
606-20-2	2,6-Dinitrotoluene	5.0 U	50	39.8	80	41.5	83	4	57-105/23
91-94-1	3,3'-Dichlorobenzidine	10 U	50	23.5	47*	25.5	51	8	50-142/21
53-70-3	Dibenzo(a,h)anthracene	5.0 U	50	38.5	77	41.5	83	8	55-123/37
132-64-9	Dibenzofuran	5.0 U	50	36.9	74	38.7	77	5	45-99/20
84-74-2	Di-n-butyl phthalate	5.0 U	50	40.6	81	41.7	83	3	64-114/16
117-84-0	Di-n-octyl phthalate	5.0 U	50	51.7	103	54.7	109	6	55-118/25
84-66-2	Diethyl phthalate	5.0 U	50	39.7	79	41.5	83	4	52-113/20
131-11-3	Dimethyl phthalate	5.0 U	50	38.9	78	40.7	81	5	38-112/19
117-81-7	bis(2-Ethylhexyl)phthalate	5.0 U	50	48.2	96	48.8	98	1	56-131/19
206-44-0	Fluoranthene	5.0 U	50	39.8	80	41.3	83	4	62-116/24
86-73-7	Fluorene	5.0 U	50	38.5	77	40.6	81	5	47-99/22
118-74-1	Hexachlorobenzene	5.0 U	50	39.9	80	41.1	82	3	62-102/21
87-68-3	Hexachlorobutadiene	5.0 U	50	32.1	64	34.1	68	6	37-91/28
77-47-4	Hexachlorocyclopentadiene	10 U	50	33.3	67	36.3	73	9	23-102/34
67-72-1	Hexachloroethane	5.0 U	50	32.6	65	35.5	71	9	33-86/30
193-39-5	Indeno(1,2,3-cd)pyrene	5.0 U	50	38.3	77	40.9	82	7	52-126/30
78-59-1	Isophorone	5.0 U	50	34.4	69	36.5	73	6	42-105/28
91-57-6	2-Methylnaphthalene	5.0 U	50	35.2	70	37.6	75	7	36-91/29
88-74-4	2-Nitroaniline	5.0 U	50	34.9	70	36.5	73	4	49-109/22
99-09-2	3-Nitroaniline	5.0 U	50	32.0	64	33.5	67	5	46-139/23
100-01-6	4-Nitroaniline	5.0 U	50	33.8	68*	36.0	72*	6	73-174/24
91-20-3	Naphthalene	5.0 U	50	34.8	70	36.9	74	6	37-89/24
98-95-3	Nitrobenzene	5.0 U	50	35.1	70	37.2	74	6	42-97/26
621-64-7	N-Nitroso-di-n-propylamine	5.0 U	50	40.5	81	44.2	88	9	42-102/27
86-30-6	N-Nitrosodiphenylamine	5.0 U	50	34.9	70	36.0	72	3	64-119/27
85-01-8	Phenanthrene	5.0 U	50	39.8	80	41.7	83	5	59-103/19
129-00-0	Pyrene	5.0 U	50	40.5	81	40.6	81	0	58-110/25
120-82-1	1,2,4-Trichlorobenzene	5.0 U	50	32.2	64	33.9	68	5	37-88/23

CAS No.	Surrogate Recoveries	MS	MSD	T56088-1	Limits
367-12-4	2-Fluorophenol	51%	54%	50%	10-66%
4165-62-2	Phenol-d5	39%	42%	37%	10-53%

Matrix Spike/Matrix Spike Duplicate Summary

Page 3 of 3

Job Number: T56085

Account: RFWTXHO Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP15356-MS	W366.D	1	07/13/10	GJ	07/13/10	OP15356	EW19
OP15356-MSD	W367.D	1	07/13/10	GJ	07/13/10	OP15356	EW19
T56088-1	W364.D	1	07/13/10	GJ	07/13/10	OP15356	EW19

The QC reported here applies to the following samples:

Method: SW846 8270C

T56085-1, T56085-2, T56085-3, T56085-4, T56085-5, T56085-6, T56085-7, T56085-8

CAS No.	Surrogate Recoveries	MS	MSD	T56088-1	Limits
118-79-6	2,4,6-Tribromophenol	84%	86%	80%	32-128%
4165-60-0	Nitrobenzene-d5	74%	78%	77%	29-115%
321-60-8	2-Fluorobiphenyl	80%	83%	84%	34-113%
1718-51-0	Terphenyl-d14	88%	88%	82%	12-145%

6.3.1

6



Metals Analysis

QC Data Summaries

7

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: T56085
Account: RFWTXHO - Weston Solutions
Project: US Oil Recovery/400 North Richey, Pasadena, TX

QC Batch ID: MP12270
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date: 07/13/10

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	8.3	12	-14	<200
Antimony	5.0	1	1	0.42	<5.0
Arsenic	5.0	1.7	1	0.86	<5.0
Barium	200	.97	3.4	0.040	<200
Beryllium	5.0	.056	.16	-0.030	<5.0
Boron	100	1.4	7.8		
Cadmium	4.0	.11	.09	0.080	<4.0
Calcium	5000	7.4	25	5.6	<5000
Chromium	10	.23	.27	-0.030	<10
Cobalt	50	.15	.22	-0.080	<50
Copper	25	1.1	5.9	-0.070	<25
Iron	100	1.1	23	19.8	<100
Lead	3.0	1	1.8	0.18	<3.0
Lithium	300	2	2		
Magnesium	5000	7.7	7.9	58.8	<5000
Manganese	15	.054	1.9	0.12	<15
Molybdenum	10	.39	.2		
Nickel	40	.69	1.4	-0.010	<40
Potassium	5000	39	45	-14	<5000
Selenium	5.0	1.5	.98	-0.30	<5.0
Silver	10	1.2	.24	-0.060	<10
Sodium	5000	9.2	100	-3.1	<5000
Strontium	10	.061	.4		
Thallium	10	.67	1.2	0.59	<10
Tin	20	.69	2.8		
Titanium	20	.29	.3		
Vanadium	50	.3	.3	0.0	<50
Zinc	20	.51	3.5	0.54	<20

Associated samples MP12270: T56085-1, T56085-2, T56085-3, T56085-4, T56085-5, T56085-6, T56085-7, T56085-8

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: T56085
 Account: RFWTXHO - Weston Solutions
 Project: US Oil Recovery/400 North Richey, Pasadena, TX

QC Batch ID: MP12270
 Matrix Type: AQUEOUS

Methods: SW846 6010B
 Units: ug/l

Prep Date:

07/13/10

07/13/10

Metal	T56085-1 Original	DUP	RPD	QC Limits	T56085-1 Original MS	Spikelot MPTW4	% Rec	QC Limits	
Aluminum	960	962	0.2	0-20	960	55300	50000	108.7	80-120
Antimony	2.7	2.9	7.1	0-20	2.7	407	400	101.1	80-120
Arsenic	6.5	6.1	6.3	0-20	6.5	420	400	103.4	80-120
Barium	10.2	10.1	1.0	0-20	10.2	438	400	107.0	80-120
Beryllium	0.0	0.0	NC	0-20	0.0	432	400	108.0	80-120
Boron									
Cadmium	0.0	0.0	NC	0-20	0.0	418	400	104.5	80-120
Calcium	37000	35300	4.7	0-20	37000	88000	50000	102.0	80-120
Chromium	2.6	2.8	7.4	0-20	2.6	408	400	101.4	80-120
Cobalt	3.6	3.3	8.7	0-20	3.6	391	400	96.9	80-120
Copper	5.6	5.4	3.6	0-20	5.6	424	400	104.6	80-120
Iron	391	371	5.2	0-20	391	51000	50000	101.2	80-120
Lead	4.9	4.3	13.0	0-20	4.9	409	400	101.0	80-120
Lithium									
Magnesium	11000	10700	2.8	0-20	11000	61900	50000	101.8	80-120
Manganese	22.5	21.5	4.5	0-20	22.5	431	400	102.1	80-120
Molybdenum									
Nickel	67.5	64.0	5.3	0-20	67.5	479	400	102.9	80-120
Potassium	48600	46300	4.8	0-20	48600	108000	50000	118.8	80-120
Selenium	0.0	2.7	200.0 (a)	0-20	0.0	263	400	65.8N (b)	80-120
Silver	0.0	0.0	NC	0-20	0.0	412	400	103.0	80-120
Sodium	672000	655000	2.6	0-20	672000	736000	50000	128.0 (c)	80-120
Strontium									
Thallium	0.0	0.0	NC	0-20	0.0	386	400	96.5	80-120
Tin	anr								
Titanium	anr								
Vanadium	1.8	1.8	0.0	0-20	1.8	407	400	101.3	80-120
Zinc	55.0	51.2	7.2	0-20	55.0	483	400	107.0	80-120

Associated samples MP12270: T56085-1, T56085-2, T56085-3, T56085-4, T56085-5, T56085-6, T56085-7, T56085-8

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

(a) RPD acceptable due to low duplicate and sample concentrations.

(b) Spike recovery indicates possible matrix interference.

(c) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: T56085

Account: RFWTXHO - Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

QC Batch ID: MP12270

Methods: SW846 6010B

Matrix Type: AQUEOUS

Units: ug/l

Prep Date:

Metal

information.

7.1.2

7

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: T56085
 Account: RFWTXHO - Weston Solutions
 Project: US Oil Recovery/400 North Richey, Pasadena, TX

QC Batch ID: MP12270
 Matrix Type: AQUEOUS

Methods: SW846 6010B
 Units: ug/l

Prep Date: 07/13/10

Metal	T56085-1 Original MSD		SpikeLot MPTW4	% Rec	MSD RPD	QC Limit
Aluminum	960	54200	50000	106.5	2.0	20
Antimony	2.7	398	400	98.8	2.2	20
Arsenic	6.5	412	400	101.4	1.9	20
Barium	10.2	432	400	105.5	1.4	20
Beryllium	0.0	424	400	106.0	1.9	20
Boron						
Cadmium	0.0	409	400	102.3	2.2	20
Calcium	37000	86800	50000	99.6	1.4	20
Chromium	2.6	397	400	98.6	2.7	20
Cobalt	3.6	384	400	95.1	1.8	20
Copper	5.6	417	400	102.9	1.7	20
Iron	391	50000	50000	99.2	2.0	20
Lead	4.9	400	400	98.8	2.2	20
Lithium						
Magnesium	11000	60700	50000	99.4	2.0	20
Manganese	22.5	422	400	99.9	2.1	20
Molybdenum						
Nickel	67.5	470	400	100.6	1.9	20
Potassium	48600	107000	50000	116.8	0.9	20
Selenium	0.0	255	400	63.8N(a)	3.1	20
Silver	0.0	402	400	100.5	2.5	20
Sodium	672000	745000	50000	146.0(b)	1.2	20
Strontium						
Thallium	0.0	378	400	94.5	2.1	20
Tin	anr					
Titanium	anr					
Vanadium	1.8	399	400	99.3	2.0	20
Zinc	55.0	474	400	104.8	1.9	20

Associated samples MP12270: T56085-1, T56085-2, T56085-3, T56085-4, T56085-5, T56085-6, T56085-7, T56085-8

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

(a) Spike recovery indicates possible matrix interference.

(b) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: T56085

Account: RFWTXHO - Weston Solutions

Project: US Oil Recovery/400 North Richey, Pasadena, TX

QC Batch ID: MP12270

Methods: SW846 6010B

Matrix Type: AQUEOUS

Units: ug/l

Prep Date:

07/13/10

Metal	BSP Result	Spikelot MPTW4	% Rec	QC Limits
Aluminum	52800	50000	105.6	80-120
Antimony	398	400	99.5	80-120
Arsenic	399	400	99.8	80-120
Barium	422	400	105.5	80-120
Beryllium	415	400	103.8	80-120
Boron				
Cadmium	409	400	102.3	80-120
Calcium	50000	50000	100.0	80-120
Chromium	408	400	102.0	80-120
Cobalt	403	400	100.8	80-120
Copper	410	400	102.5	80-120
Iron	50200	50000	100.4	80-120
Lead	392	400	98.0	80-120
Lithium				
Magnesium	50600	50000	101.2	80-120
Manganese	408	400	102.0	80-120
Molybdenum				
Nickel	395	400	98.8	80-120
Potassium	50700	50000	101.4	80-120
Selenium	412	400	103.0	80-120
Silver	385	400	96.3	80-120
Sodium	51000	50000	102.0	80-120
Strontium				
Thallium	399	400	99.8	80-120
Tin	anr			
Titanium	anr			
Vanadium	399	400	99.8	80-120
Zinc	419	400	104.8	80-120

Associated samples MP12270: T56085-1, T56085-2, T56085-3, T56085-4, T56085-5, T56085-6, T56085-7, T56085-8

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(anr) Analyte not requested

7.1.3

7

SERIAL DILUTION RESULTS SUMMARY

Login Number: T56085
 Account: RFWTXHO - Weston Solutions
 Project: US Oil Recovery/400 North Richey, Pasadena, TX

QC Batch ID: MP12270
 Matrix Type: AQUEOUS

Methods: SW846 6010B
 Units: ug/l

Prep Date: 07/13/10

Metal	T56085-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum	960	958	0.3	0-10
Antimony	2.70	0.00	100.0 (a)	0-10
Arsenic	6.46	0.00	100.0 (a)	0-10
Barium	10.2	8.75	14.1 (a)	0-10
Beryllium	0.00	0.00	NC	0-10
Boron				
Cadmium	0.00	0.00	NC	0-10
Calcium	37000	37300	0.7	0-10
Chromium	2.55	2.47	3.1	0-10
Cobalt	3.57	2.82	21.0 (a)	0-10
Copper	5.61	7.01	25.0 (a)	0-10
Iron	391	494	26.3* (b)	0-10
Lead	4.86	0.00	100.0 (a)	0-10
Lithium				
Magnesium	11000	11100	0.3	0-10
Manganese	22.5	22.5	0.0	0-10
Molybdenum				
Nickel	67.5	66.0	2.2	0-10
Potassium	48600	42600	12.2* (b)	0-10
Selenium	0.00	0.00	NC	0-10
Silver	0.00	0.00	NC	0-10
Sodium	672000	678000	1.0	0-10
Strontium				
Thallium	0.00	0.00	NC	0-10
Tin	anr			
Titanium	anr			
Vanadium	1.79	0.00	100.0 (a)	0-10
Zinc	55.0	61.4	11.7* (b)	0-10

Associated samples MP12270: T56085-1, T56085-2, T56085-3, T56085-4, T56085-5, T56085-6, T56085-7, T56085-8

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(anr) Analyte not requested

(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

(b) Serial dilution indicates possible matrix interference.

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: T56085
Account: RFWTXHO - Weston Solutions
Project: US Oil Recovery/400 North Richey, Pasadena, TX

QC Batch ID: MP12275
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 07/13/10

Metal	RL	IDL	MDL	MB	
				raw	final
Mercury	0.20	.049	.094	0.033	<0.20

Associated samples MP12275: T56085-1, T56085-2, T56085-3, T56085-4, T56085-5, T56085-6, T56085-7, T56085-8

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

7.2.1

7

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: T56085
 Account: RFWTXHO - Weston Solutions
 Project: US Oil Recovery/400 North Richey, Pasadena, TX

QC Batch ID: MP12275 Methods: SW846 7470A
 Matrix Type: AQUEOUS Units: ug/l

Prep Date: 07/13/10 07/13/10

Metal	T56085-1 Original DUP		RPD	QC Limits	T56085-1 Original MS		Spikelot HGTXAQ40 % Rec		QC Limits
Mercury	0.0	0.053	200.0 (a)	0-6.6	0.0	2.8	3	93.3	78-118

Associated samples MP12275: T56085-1, T56085-2, T56085-3, T56085-4, T56085-5, T56085-6, T56085-7, T56085-8

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested
 (a) RPD acceptable due to low duplicate and sample concentrations.

7.2.2
7

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: T56085
 Account: RFWTXHO - Weston Solutions
 Project: US Oil Recovery/400 North Richey, Pasadena, TX

QC Batch ID: MP12275 Methods: SW846 7470A
 Matrix Type: AQUEOUS Units: ug/l

Prep Date: 07/13/10

Metal	T56085-1 Original MSD	Spikelot HGTXAQ40 % Rec	MSD RPD	QC Limit
Mercury	0.0 2.9	3 96.7	3.5	

Associated samples MP12275: T56085-1, T56085-2, T56085-3, T56085-4, T56085-5, T56085-6, T56085-7, T56085-8

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

7.2.2
7

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: T56085
 Account: RFWTXHO - Weston Solutions
 Project: US Oil Recovery/400 North Richey, Pasadena, TX

QC Batch ID: MP12275 Methods: SW846 7470A
 Matrix Type: AQUEOUS Units: ug/l

Prep Date: 07/13/10

Metal	BSP Result	Spikelot HGTXAQ40	% Rec	QC Limits
Mercury	2.9	3	96.7	80-120

Associated samples MP12275: T56085-1, T56085-2, T56085-3, T56085-4, T56085-5, T56085-6, T56085-7, T56085-8

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested

7.2.3
7

Reference 18:

Texas Commission on Environmental Quality. Site Assessment Investigation Report:
Investigation #759454. May 29, 2009. 3 pages.

Texas Commission on Environmental Quality

Investigation Report

MCC RECYCLING LLP

CN603445016

MCC RECYCLING

RN105684302

Investigation # 759454

Incident # 125265

Investigator: GREGORY GOODE

Site Classification

Conducted: 05/29/2009 -- 05/29/2009

No Industry Code Assigned

Program(s): EMERGENCY RESPONSE

Investigation Type : Site Assessment

Location : 200 N RICHEY ST., PASADENA, TX 77506

Additional ID(s) : TXG341618

Address: 200 RICHEY ST;
PASADENA, TX 77506

Activity Type : REGION 12 - HOUSTON
ER ONSITE - ER on-site investigation

Principal(s) :

Role	Name
RESPONDENT	MCC RECYCLING LLP

Contact(s) :

Role	Title	Name	Phone
Participated in Investigation	INVESTIGATOR	TONY TOMLISON	
Participated in Investigation		LIBBY OWENS	
Regulated Entity Contact	ENVIRONMENTAL, HEALTH AND SAFETY MANAGER	JAMES WISE	Cell (713) 557-9168

Other Staff Member(s) :

Role	Name
Supervisor	STANLEY INDEST

Associated Check List

<u>Checklist Name</u>	<u>Unit Name</u>
EMERGENCY RESPONSE INVESTIGATION	Clarifier Tank

Investigation Comments :

INTRODUCTION:

Chem-Tel Report #20091722 was generated per state notification, from Mr. James Wise, with MCC Recycling advising the Texas Commission on Environmental Quality Region 12 (TCEQ-R12) on the discharge of approximately 3,000 gallons of industrial wastewater, due to undetermined cause. It is suspected that a faulty valve or pump connected to a clarifier tank. The listed material contains high total suspended solids (TSS), biological oxygen demand (BOD), and possible metals. No injuries were reported as a result of this release.

GENERAL FACILITY INFORMATION:

The discharged occurred from a clarifier tank, located at 200 N. Richey Street in Pasadena, Tx. (Harris County). The facility is owned and operated by MCC Recycling a wastewater storage and treatment plant.

BACKGROUND:

A berm was constructed at the edge of the bayou for containment and protection pruposes. A vacuum truck was disptached to clear off the (TSS) from the water surface within the clarifier and prevent overflowing. TCEQ-R12 Primary Responder, Greg Goode conducted a callback for follow up details at 0250 hours on 5/29/09. In consultation with Mr. Wise it was indicated that the wastewater material did not go through any process. Facility crews are actively pumping through the clarifier, with an estimated 10% released to the bayou. The material is totally soluble in water according to Mr. Wise. There is a possibility that the material contains metals. The United States Coast Guard (U.S.C.G.) did notify MCC Recycling and Harris County Pollution Health and Environmental Services (HCPHES) was advised. TCEQ-R12 acknowledged the information. The call ended at 0305 hours.

Jim Indest, Emergency Response Section Work Leader was advised of the recent spill at 0725 hrs. for an onsite response. The investigator arrived at N. Richey and Vince Bayou at 0745 hrs. Photographic documentation was compiled as follows: PHOTO #603 - View of the overflowed clarifier at 0815 hrs. with vacuum hose attached. PHOTO #604 - View of path of migration of the spill to fenceline perimeter. The down gradient path to the fenceline, appeared to be heavily saturated zone, indicative of a subsurface release. PHOTO #605 - View of a secret pipe exposed from the wastewater tank used to discharge to the bayou at 0915 hrs. Investigators, Elizabeth Owens, and Tony Tomilison from (HCPHES) were also present upon the investigation to sample the clarifier and adjacent soils. The investigators on scene observed that the clarifier had been skimmed down below the overfill point, no discharge was noted. MCC Recycling crews arrived at 0930 hrs. with the Night Supervisor, Jonathan Luna in attendance. William Bergon, Electrician hired by MCC Recycling approached the investigator at 0935 hrs. indicating that he has video eveidence of the discharging and indiated that he will forward via e-mail. TCEQ-R12 acknowledged the information. Upon this investigation response this investigator did not observe any fishkills and aquatic life was active in the immediate area of the facility. Upon this determination and available information TCEQ-R12 terminated its response and departed the scene at 0940 hrs.

No Violations Associated to this Investigation

Signed _____
Environmental Investigator

Date _____

Signed _____
Supervisor

Date _____

Attachments: (in order of final report submittal)

___ Enforcement Action Request (EAR)

___ Letter to Facility (specify type) : _____

Investigation Report

___ Sample Analysis Results

___ Manifests

___ NOR

___ Maps, Plans, Sketches

___ Photographs

___ Correspondence from the facility

___ Other (specify) :

Reference 19:

Texas Commission on Environmental Quality. Site Assessment Investigation Report:
Investigation #749279. June 08, 2009. 3 pages.

Texas Commission on Environmental Quality

Investigation Report

MCC RECYCLING LLP

CN603445016

MCC RECYCLING

RN105684302

Investigation # 749279

Incident # 125434

Investigator: KAREN PUENTE

Site Classification

Conducted: 06/08/2009 -- 06/08/2009

No Industry Code Assigned

Program(s): EMERGENCY RESPONSE

Investigation Type : Site Assessment

Location : 200 N RICHEY ST., PASADENA, TX 77506

Additional ID(s) : A85958
TXG341618

Address: 200 RICHEY ST;
PASADENA, TX 77506

Activity Type : REGION 12 - HOUSTON
ER ONSITE - ER on-site investigation

Principal(s) :

Role	Name
RESPONDENT	MCC RECYCLING LLP

Contact(s) :

Role	Title	Name	Phone
Regulated Entity Contact	ENVIRONMENTAL, HEALTH & SAFETY MANAGER	MR JAMES WISE	Work (832) 605-5268

Other Staff Member(s) :

Role	Name
Supervisor	STANLEY INDEST

Associated Check List

<u>Checklist Name</u>	<u>Unit Name</u>
EMERGENCY RESPONSE INVESTIGATION	Lift Station

Investigation Comments :

The liftstation at 200 Richey Road dba, MCC Recycling, has overflowed again for the third documented time in less than three weeks, sending partially treated waste water to the soil and into Vince Bayou. (See pics 606 and 609).

I arrived on scene at 8:45 AM and HCPHES Water Surveillance Supervisor, Nuguent Cotton, was taking water samples. No one from MCC was present at the time.

According to Mr. Cotton, the spill was discovered by Elizabeth Gwen, Harris County Public Health and Environmental Services, around 7:30 AM. She was on her way to the court hearing involving US Oil Recovery when she decided to drive by the plant. She noticed the water on the ground running

into the bayou and immediately had Mr. Cotton come take samples.

Mr. Jhonaton Lara, the operator for the site (daytime), showed up after I was on site for 15 minutes. He said the spill was discovered this morning around the same time Ms. Gwen spotted the spill. He had no more information as to why or how the spill occurred, who was present while the spill occurred, how long it lasted and/or how much was spilled. He said the environmental issues were handled by James Wise and he was in court today. I asked if notification about the spill was made to the state and he said it had not been made. I reiterated the necessity to report the spill to the state. I asked him to immediately stop the flow of waste water into the bayou. I suggested making a dam out of the dirt which he had some workers do right away with shovels. Then he, himself, operated a tractor and started to excavate the impacted soil and place it into an empty roll off box that was already on the property. I had asked him about hiring a third party clean up crew and he said that Klaus Genessler, the owner, would not allow them because it was too expensive.

After talking to Jhonaton, I was able to speak with Tommy Kaiser, the electrician that was on site. He said after discovering the spill, he pumped the water out of the lift station into a holding tank on the other side of the bayou. He said that no one emptied the lift station on Friday (which gets emptied every 2-3 days). He then walked me over to the largest 'aeration basin' on the property and showed me a crack in the wall of the weir which trickled down a drain to the lift station(see pic 616). The weir was completely full this morning before he pumped the water to the other tank.

According to the spill notification sent in by Mr. James Wise on June 9, 2009 (Report #20091831), an estimated amount of 300 gallons was spilled to the ground, of which, an estimated 30 gallons made it to the bayou. Mr. Wise is aware of the 30 day follow up letter per 30 TAC 327.5(c). A follow up investigation will be conducted.

No Violations Associated to this Investigation

Signed _____
Environmental Investigator

Date _____

Signed _____
Supervisor

Date _____

Attachments: (in order of final report submittal)

___ Enforcement Action Request (EAR)

___ Letter to Facility (specify type) : _____

Investigation Report

___ Sample Analysis Results

___ Manifests

___ NOR

___ Maps, Plans, Sketches

___ Photographs

___ Correspondence from the facility

___ Other (specify) :

Reference 20:

Texas Commission on Environmental Quality. Air Complaint Investigation, Compliance Investigation: Investigation #774997. October 20, 2009. 5 pages.

Texas Commission on Environmental Quality

Investigation Report

MCC RECYCLING LLP

CN603445016

MCC RECYCLING

RN105684302

Investigation # 774997

Incident # 128128 128827

Investigator: TERRY VASUT

Site Classification

Conducted: 08/17/2009 -- 10/20/2009

No Industry Code Assigned

Program(s): AIR QUALITY NON
PERMITTED

Investigation Type : Compliance Investigation

Location : 200 N RICHEY ST., PASADENA,
TX 77506

Additional ID(s) : F2039
A85958

Address: 200 RICHEY ST;
PASADENA, TX 77506

Activity Type : REGION 12 - HOUSTON
AIRCOMPL - Air Complaint Investigation
AIRFI - Follow-up Compliance Investigation

Principal(s) :

Role	Name
RESPONDENT	MCC RECYCLING LLP

Contact(s) :

Role	Title	Name	Phone
Regulated Entity Mail Contact	PRESIDENT	MR KLAUS GENSSLEF	Work (713) 473-0013

Other Staff Member(s) :

Role	Name
Investigator	CHARLES BURNER
QA Reviewer	PAUL BLANTON
Investigator	DANIEL O'BRIEN
Supervisor	JOSEPH DOBY
Investigator	GARY FOGARTY

Associated Check List

Checklist Name

COMPLAINT INVESTIGATION - AIR

Unit Name

Sitewide

Investigation Comments :

INTRODUCTION
Introduction

Incident number(s): 128128, 128827

How was incident(s) received: Email

Date(s) and Time(s) incident(s) received: August 13, 2009, 2:42 p.m. - August 28, 10:54 a.m.

What did the complainant allege: There is a wide variation of odors coming from the treatment plant

MCC RECYCLING - PASADENA

8/17/2009 to 10/20/2009 Inv. # - 774997

Page 2 of 5

next door. Time varies as to how strong it is. It depends on weather conditions. It seems to be of a stale solvent related odor.

Date, time, frequency, and duration of each incident: Lately it is stronger in the morning.

Description of alleged health effects: Complainant is concerned of the possible health issues from this. Complainant is experiencing nausea if the wind is from the west.

Description of alleged property effects: None

Alleged source: MMC Recycling, LLP and USOR

Contact Name: Klaus Genssler

Contact Title: Owner

Source Address: 200 and 400 North Richey

City (County), State, Zip Code: Pasadena, Texas, 77506

Telephone Number: (713) 473-0013

Time Contacted: N/A

Comment: N/A

Google Earth image is included in Attachment 1.

Daily Summary

Date and time complainant contacted prior to conducting investigation (if not anonymous):

Complainant was contacted via telephone on August 17, 2009, at 8:45a.m. The complainant rides a bicycle to work early in the morning and smells a strong odor as the complainant turns the corner on West Richey Access Street by Vince Bayou.

Date of investigation: August 17, 2009.

Name of investigator(s): Terry Vasut and Dan O'Brien

Time of arrival: 10:35 a.m.

Description of the surrounding land use: Both industrial and residential

Description of the terrain: Flat except for Vince Bayou which flows through the area.

Investigation Summary

Meteorological conditions during alleged incident:

Cloud Cover: Partly cloudy

Wind direction: West

Wind Speed: Variable

Temperature: 79°F

Precipitation: None

Source of Meteorological Conditions: Complainant

Meteorological conditions during investigation on August 17:

Cloud Cover: Partly cloudy

Wind direction: South-southwest

Wind Speed: 3 - 5mph

Temperature: 89°F

Precipitation: None

Source of meteorological conditions CAMS 1049

Meteorological conditions during investigation on August 20:

Cloud Cover: Partly cloudy

Wind direction: South-southwest

Wind Speed: 5 - 7mph

Temperature: 91°F

Precipitation: None

Source of meteorological conditions CAMS 1049

Investigation Narrative: At 9:55 a.m., the investigators drove to Pasadena North (CAMS 1049) to determine if USOR was emitting any odors. The winds were not favorable at this location; however,

there was a light hydrocarbon odor coming from the overflow pond located at the site.

Next, the investigators drove to the 500 Block of West Richey Street in Pasadena, Texas. Once again, the winds were from the south-southwest making it impossible to get downwind of MCC Recycling.

Was odor detected? No.

The investigators then drove northbound on North Richey. While driving past the gate at MCC Recycling, a strong odor of hydrocarbons and sewage were detected. The odor was strong enough to linger in the cab of the state vehicle and on the clothes of the investigators. The investigators drove past MCC Recycling all the way to USOR. There the odor was not present. The investigators then drove back to MCC Recycling where the odor was very strong. GPS coordinates for the location are: N 28°42'54.1", W 95°13'12.0" or right across the street from MCC Recycling. The aeration basin and clarifier were operating. The investigators did not go on site.

Was odor detected? Yes.

Upon arrival back at the Houston Regional Office, this investigator contacted Elizabeth Sears in the Water Quality Section of the Houston Regional Office. Ms. Sears said Harris County Public Health & Environmental Services (HCPHES) has received numerous complaints concerning MCC Recycling. Ms. Sears provided the names of two HCPHES investigators that are currently responding to the complaints. The following

day, August 18, 2009, this investigator contacted Denise Hall and Libby Guynn, investigators with HCPHES. Ms. Guynn said sampling was performed on August 14, 2009, with Suma Canisters, and further sampling will be conducted on Thursday August 20 and results of the sampling would be provided to the TCEQ. Canister #3614 which was pulled on the street in front of MCC Recycling on August 14 indicated 19.43 ppbv m/p-Xylene, 5.98 ppbv Toluene, and 8 ppbv Benzene. The investigators also reported they experienced burning eyes and nose and throat irritation while taking this sample.

On August 20, 2009, Terry Vasut and Charles Burner, Environmental Investigator, TCEQ Region 12 Waste Section, and Gary Fogarty, Environmental Investigator, TCEQ Water Section, accompanied HCPHES investigators Libby Guynn and Denise Hall to the site. Also present were John Emerson, Waste Water Specialist and Craig Hill, Emergency Response Specialist, both with HCPHES. The facility was not notified about the investigation because this was a complaint investigation and the TCEQ does not normally inform industrial users of a pending investigation. Three canisters were utilized during this sampling event. The upwind canister (#3610) was exposed between the primary clarifier and trickle filter system. Results of this sample were non-detect (ND) for all parameters. There was no noticeable odor at this sampling location and the portable Multi-RAE indicated 0.0 ppm volatile organic compound (VOC) for all parameters. The second canister (#3613) was pulled downwind of the clarifier and trickle filter system on the entry road between the trickle filter and head works. Canister results indicated 8.61 ppbv m/p-Xylene, 3.28 ppbv Toluene, and 4.82 ppbv Benzene. There was a moderate odor (oily/solvent/sewage) at this location and the Multi-RAE read 1.0ppm VOC. The last downwind canister (#689) was exposed on the rim of the aeration basin. This canister indicated 10.94 ppbv m/p-Xylene, 2.59 ppbv Toluene, and 3.33 ppbv Benzene. There was a moderate odor at this location and the Multi-RAE read 0.3 - 0.7 ppm VOC.

On October 20, 2009, this investigator returned to MCC to determine the status of the facility. The facility was not notified about this investigation. The operator, Jonathan Lara, stated MCC is not receiving any wastewater at this time and stopped receiving wastewater last Friday due to heavy rains in the area. Very little VOC/sludge odor were noticeable on site. The two agitation floating islands on the aeration basin were operating. Oxygen (O₂) was being supplied at ~15 cfm to each island. The O₂ sensor for the basin was inoperable. The operator used a portable O₂ analyzer to determine the level of O₂ in the basin. The O₂ level was between 2 and 4 % O₂ which is considered a normal range for the aeration basin.

MCC RECYCLING - PASADENA

8/17/2009 to 10/20/2009 Inv. # - 774997

Page 4 of 5

Were other citizens contacted? No.
Was an odor log left with the complainant? No.

Location of the odor: On August 20, 2009, the odor was coming from the trickle filter system and the oil/water clarifier.

Specific cause of the odor: Raw sewage and oily waste water that is stored in the clarifier and drip filter system.

Did the emissions have an impact on the complainant's property? No.

Did the emissions have an impact on the investigator(s)? Yes. Describe how. Denise Hall reported that she felt dizzy during the investigation. The odor was offensive and strong enough to hinder the appetite of this investigator resulting in a headache. Was a nuisance condition verified? A nuisance condition was not verified at the complainant's location.

Photographs are included in Attachment 3.

Is actual source the same as the alleged source? Yes

Was a compliance investigation conducted (i.e. MNSR)? No.

Was any additional permit or 30 TAC investigations conducted? No

Were any non-nuisance violations alleged? No.

Complainant contacted with the results of the investigation (if not anonymous): Yes

Date: August 17, 2009

Time: 12:53 p.m.

Comment: This investigator notified the complainant that incident #128128 was not confirmed as odors were not present at the complainant's workplace. Helen Pagola-McCoy, Environmental Investigator in the TCEQ Regional Office, contacted the complainant on September 2, 2009, and advised the complainant that incident # 128827 will be rolled into this report. Also, the complainant was advised there are ongoing enforcement actions with MCC Recycling. HCPHES through the Harris County Courthouse issued two temporary restraining orders in an attempt to stop the spills at MCC Recycling. On June 8, 2009, a temporary injunction was granted by the Harris County Court for MCC Recycling to stop receiving wastes until certain conditions were met. The injunction also requires USOR to empty an old aeration basin at the USOR facility. Furthermore, two water investigations (CCEDs Investigation #748898 and #768045), will result in an enforcement order issued by TCEQ.

Exit Interview

As no violations were alleged, no Exit Interview Form is required.

GENERAL FACILITY AND PROCESS INFORMATION

Process description: USOR has rerouted all of their wastewater to the MCC Recycling facility. MCC Recycling discharges process wastewater commingled with domestic wastewater to the City of Pasadena New Vince Bayou Wastewater Treatment facility (TPDES Permit No. WQ0010053-009; EPA I.D. No. TX0117528).

BACKGROUND ON THE ALLEGED SOURCE

Current Enforcement Actions:

Based on this investigation, no violations are being alleged.

Additional Issues

There were no Additional Issues noted during this investigation.

List of Report Attachments

1. Google Earth image of MCC Recycling
2. Odor Survey Route Map
3. Photographs
4. Sampling Results

No Violations Associated to this Investigation

Signed _____
Environmental Investigator

Date _____

Signed _____
Supervisor

Date _____

Attachments: (in order of final report submittal)

___ Enforcement Action Request (EAR)

___ Maps, Plans, Sketches

___ Letter to Facility (specify type) : _____

___ Photographs

___ Investigation Report

___ Correspondence from the facility

___ Sample Analysis Results

___ Other (specify) : _____

___ Manifests

___ NOR

Reference 21:

Texas Commission on Environmental Quality. Pretreatment Compliance Investigation
Report: Investigation #780194. September 02, 2009. 3 pages.

Texas Commission on Environmental Quality

Investigation Report

MCC RECYCLING LLP

CN603445016

MCC RECYCLING

RN105684302

Investigation # 780194

Incident #

Investigator: CYNTHIA GILMER

Site Classification

Conducted: 09/02/2009 -- 09/02/2009

No Industry Code Assigned

Program(s): AIR QUALITY NON
PERMITTED

Investigation Type : Site Assessment

Location : 200 N RICHEY ST., PASADENA,
TX 77506

Additional ID(s) :

Address: 200 RICHEY ST;
PASADENA, TX 77506

Activity Type : REGION 12 - HOUSTON
AIR RECON - Air Reconnaissance investigation
GFIR - Air - Gas Find IR

Principal(s) :

Role	Name
RESPONDENT	MCC RECYCLING LLP

Contact(s) :

Role	Title	Name	Phone
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Other Staff Member(s) :

Role	Name
Supervisor	JASON HARRIS
Investigator	KIMIKA LOWE

Associated Check List

<u>Checklist Name</u>	<u>Unit Name</u>
AIR FOCUSED INVESTIGATION - EQUIPMENT MONITORING	Sitewide

Investigation Comments :

Introduction

The Texas Commission on Environmental Quality (TCEQ) Region 12 Office routinely conducts surveillance of regulated entities operating in the Houston region. The purpose of these observations is to identify emissions detectable by sight, odor or with use of the GasFindIR camera and determine if additional investigation is needed.

Daily Narrative

On September 2, 2009, Cynthia Gilmer and Kimika Lowe, Environmental Investigators with the Region 12 Office of the TCEQ, conducted a reconnaissance investigation of MCC Recycling (RN105-684-302). This investigation included use of the GasFindIR camera as well as a survey of

the area for odors and visible emissions.

Meteorological Conditions

Conditions: Clear

Temperature: 88 deg. F

Wind Direction: NE

Wind Speed: 2.2 MPH

Relative Humidity: 37 %RH

Met conditions were obtained from a portable Extech Instrument, Model 45160.

Observations

Reconnaissance of this site was performed from the following locations:

Location 1 (29 42 52.00 N, 095 13 8.8 W):

Investigators were posted just outside the facility at 200 N Richey St. One API separator and carbon system were imaged.

Light wastewater odors were observed at this location. The odor was not strong enough to warrant a site visit. In addition, visible emissions were not observed.

Conclusions and Recommendations:

No odors or visible emissions were observed from the above location during this reconnaissance investigation. In addition, no concerns were noted utilizing the GasFindIR camera. Therefore, no follow-up action will be required.

No Violations Associated to this Investigation

Signed _____
Environmental Investigator

Date _____

Signed _____
Supervisor

Date _____

Attachments: (in order of final report submittal)

___ Enforcement Action Request (EAR)

___ Letter to Facility (specify type) : _____

Investigation Report

___ Sample Analysis Results

___ Manifests

___ NOR

___ Maps, Plans, Sketches

___ Photographs

___ Correspondence from the facility

___ Other (specify) :

Reference 22:

Texas Commission on Environmental Quality. Pretreatment Compliance Investigation
Report: Investigation #795986. January 13, 2010. 4 pages.

Texas Commission on Environmental Quality

Investigation Report

MCC RECYCLING LLP

CN603445016

MCC RECYCLING

RN105684302

Investigation # 795986

Incident #

Investigator: GARY FOGARTY

Site Classification

INDUSTRIAL USER-NOT APPROVED

Conducted: 01/08/2010 -- 01/13/2010

No Industry Code Assigned

Program(s): PRETREATMENT

Investigation Type : Compliance Investigation

Location : 200 N RICHEY ST., PASADENA, TX 77506

Additional ID(s) :

Address: 200 RICHEY ST;
PASADENA, TX 77506

Activity Type : REGION 12 - HOUSTON
PTRCNAPPIU - PT IU Recon - Non-Approved Program

Principal(s) :

Role	Name
RESPONDENT	MCC RECYCLING LLP

Contact(s) :

Role	Title	Name	Phone
Participated in Investigation	ENVIRONMENTAL INVESTIGATOR	MR JOHN EMERSON	Work (713) 740-8753
Regulated Entity Contact	PRESIDENT	MR KLAUS GENSSLEF	(713) 472-5668
			Work (713) 473-0013
Regulated Entity Mail Contact	PRESIDENT	MR KLAUS GENSSLEF	Work (713) 473-0013
			(713) 472-5668
Participated in Investigation	COMPLIANCE OPERATOR	MR ADELE POLLARD	(713) 472-5668
			Work (713) 473-0013
Regulated Entity Contact	COMPLIANCE/OPERATION S MANAGER	ADELE POLLARD	Work (713) 473-0013
			(713) 472-5668

Other Staff Member(s) :

Role	Name
Investigator	HEATHER MALONEY
Investigator	BARBARA SULLIVAN
QA Reviewer	KELLEY KARTYE
Supervisor	BARBARA SULLIVAN
Investigator	STACY PENTECOST

Associated Check List

Checklist Name

PRETREATMENT IU SHORT FORM - NONAPPROVED PROGRAM

Unit Name

MCC Recycling 795986

Investigation Comments :

INTRODUCTION

An Industrial User (IU) Reconnaissance investigation of the MCC Recycling facility was conducted on January 8 and 13, 2010 as part of an ongoing investigation of the US Oil Recovery facility located at 400 N. Richey Street, Pasadena, Texas (See CCEDS Report # 786853). The facility was not notified because this was an ongoing investigation of spills that occurred at US Oil Recovery on January 7 and 10, 2010. US Oil Recovery is a sister facility to the MCC Recycling facility. Barbara Sullivan, TCEQ Houston office, Water Quality Team Leader was present during the January 8th investigation. Stacy Pentecost, TCEQ Houston Region Office, Water Quality Investigator conducted sampling of wastewater on January 8, 2010. Heather Maloney, TCEQ Houston Region Office, Water Quality investigator conducted sampling of wastewater during the January 13th investigation. The points of contact for both facilities are the same. There was no exit interview. However, an exit interview form was sent to Klaus Genssler, president of MCC Recycling and US Oil Recovery on March 23, 2010. A Notice of Enforcement letter was issued to facilitate compliance.

GENERAL FACILITY AND PROCESS INFORMATION

The MCC Recycling facility discharges process wastewater to the City of Pasadena New Vince Bayou Wastewater Treatment Plant (WWTP) (TCEQ Permit No.: WQ0010053-009; EPA ID.: TX0117528). The facility has been alleged to have been a source of interference at the WWTP. The facility also discharges domestic wastewater to the Publicly Owned Treatment Works (POTW).

The facility treats wastewater from US Oil Recovery (USOR).

The facility is subject to applicable pretreatment standards contained in 40 CFR Part 437-Centralized waste Treatment Point Source Category.

Wastewater from USOR is sent through an oil water separator, biological treatment in an aeration basin, and final clarification before being sent to the sample point and being discharged to the POTW. The facility straddles Vince Bayou. There is an east plant and a west plant. The majority of the current processes occur at the west plant. The final clarifier is at the east plant. Wastewater is pumped to the oil water separator located on top of the headworks. From there it is pumped to the aeration basin. The aeration basin was in operation. The aeration basin is supplied with oxygen and polymers. From the aeration basin the wastewater is pumped over the bayou to a clarifier at the east plant. From the clarifier the wastewater is pumped back to the sample point on the west plant. Sludge from the final clarifier on the east plant is pumped to a digester for thickening. However, the sludge is eventually moved from the clarifier to a belt press adjacent to the digester. Trucks can haul dewatered sludge from the belt press. The sludge is being sent back to the USOR facility for further processing.

The wastewater from the final clarifier is pumped through a sample point. The sample point belongs to the USOR facility, but is located on the grounds of the MCC Recycling facility near the headworks. The City of Pasadena requires monitoring by USOR at the sample point to determine compliance with the City's local limit and Federal categorical pretreatment standards. The City also performs monitoring at the sample point. The sample point is secured within a fence with a locked gate. The sample point includes a refrigerated composite automatic sampler. The City control access to the sample point.

BACKGROUND INFORMATION

This significant industrial user (SIU) was last investigated by the TCEQ on August 20, 2009. That investigation was a joint investigation with the Harris County Public and Environmental Health Services. The results of that investigation have been included in an on-going enforcement action (Cause Number 2009-32636) against US Oil Recovery, MCC Recycling, and Genssler Holdings in the 125th Judicial District of the Harris County Court. Harris County is an additional plaintiff in the on-going court case against USOR, MCC Recycling, and Genssler Holdings. An incident concerning MCC Recycling was also investigated October 28, 2009.

ADDITIONAL INFORMATION

The MCC Recycling facility is located at what used to be the City of Pasadena Old Vince bayou Wastewater Treatment Plant (WWTP). The old WWTP treated domestic wastewater. Two separate discharges were observed coming from the two old outfall pipes downstream of an old chlorine contact chamber. The two old outfall pipes are adjacent to each other. Both pipes are located at the east plant. Both pipes discharge to Vince Bayou. Both pipes are on the east bank of Vince Bayou and are located at the MCC recycling facility's east plant. The pipes served as the last permitted outfalls when the City of Pasadena operated the facility as a domestic WWTP. For convenience, this report will designate one pipe as the north middle pipe and the other as the south middle pipe. However, there is another pipe further south on the west bank of Vince Bayou and there is another pipe further north on the east bank of Vince Bayou.

On January 8, 2010 wastewater was observed discharging from the north middle pipe. The tide was low, which exposed the pipe and the muddy bank of the bayou. The wastewater was a light tan color. Light tan colored wastewater was also found in the old flow measuring channel of the old chlorine contact channel. The wastewater discharging into the bayou was sampled. The sample results and pictures of the north middle outfall and the flow measuring channel are attached to this report. USOR representative Adele Pollard was contacted and shown the discharge. Harris County Public and Environmental Health Service personnel were also at the site.

On January 13, 2010, the outfalls were investigated as a follow-up to the January 8, discharge. On January 13, 2010, the south middle pipe was observed to be discharging water colored dark brown. The tide was again low. The discharge was sampled. The analytical results indicated the Acetone was present in the discharge. This indicated that the water was an unpermitted discharge. A picture of the discharge and the analytical results are attached to this report. USOR was not contacted about this discharge because the sample results were not available in a timely manner.

NOE Date: 3/25/2010**OUTSTANDING ALLEGED VIOLATION(S)
ASSOCIATED TO A NOTICE OF ENFORCEMENT****Track No: 390548****Compliance Due Date: To Be Determined****Violation Start Date: 1/8/2010****2D TWC Chapter 26.121(a)****Alleged Violation:**

Investigation: 795986

Comment Date: 03/22/2010

Failure to prevent the unauthorized discharge of wastewater into the waters of the State. The MCC Recycling facility was found to be discharging wastewater from the old chlorine contact chamber flow measurement channel to Vince Bayou from an unpermitted outfall on January 8, 2010. An additional unauthorized discharge was found going to Vince Bayou from a second unpermitted outfall on January 13, 2010.

Recommended Corrective Action: All unauthorized discharges to the waters of the state must cease immediately. US Oil Recovery and MCC Recycling must take measures to prevent the unpermitted discharges of wastewater adjacent to or into the waters of the State of Texas.

Signed _____
Environmental Investigator

Date _____

Signed _____
Supervisor

Date _____

Attachments: (in order of final report submittal)

___ Enforcement Action Request (EAR)

___ Maps, Plans, Sketches

___ Letter to Facility (specify type) : _____

___ Photographs

Investigation Report

___ Correspondence from the facility

___ Sample Analysis Results

___ Other (specify) : _____

___ Manifests

___ NOR

Reference 23:

Texas Commission on Environmental Quality. Investigation Report: Investigation #828557.
June 09, 2010. 3 pages.

Texas Commission on Environmental Quality

Investigation Report

MCC RECYCLING LLP

CN603445016

MCC RECYCLING

RN105684302

Investigation # 828557

Incident #

Investigator: TERRY VASUT

Site Classification

Conducted: 06/09/2010 -- 06/09/2010

No Industry Code Assigned

Program(s): AIR QUALITY NON
PERMITTED

Investigation Type : Site Assessment

Location : 200 N RICHEY ST., PASADENA,
TX 77506

Additional ID(s) :

Address: 200 RICHEY ST;
PASADENA, TX 77506

Activity Type : REGION 12 - HOUSTON
AIR RECON - Air Reconnaissance investigation
GFIR - Air - Gas Find IR

Principal(s) :

Role	Name
RESPONDENT	MCC RECYCLING LLP

Contact(s) :

Role	Title	Name	Phone
------	-------	------	-------

Other Staff Member(s) :

Role	Name
Supervisor	JOSEPH DOBY
Investigator	DANIEL O'BRIEN

Associated Check List

Checklist Name

AIR GENERIC INVESTIGATION (10 ITEMS)

Unit Name

Aeration Basin

Investigation Comments :

Introduction

The Texas Commission on Environmental Quality (TCEQ) Region 12 Office routinely conducts surveillance of regulated entities operating in the Houston region. The purpose of these observations is to identify emissions detectable by sight, odor or with use of the GasFindIR camera and determine if additional investigations are needed.

Daily Narrative

On June 9, 2010, Terry Vasut and Dan O'Brien, Environmental Investigators with the Regional 12 Office of the TCEQ, conducted a reconnaissance investigation of MCC Recycling (RN: 105-684-302). This investigation included use of the GasFindIR camera as well as a survey of the area for odors and visible emissions.

MCC RECYCLING - PASADENA

6/9/2010 Inv. # - 828557

Page 2 of 3

Meteorological Conditions: Cloudy
Temperature: 93.7°F
Wind Direction: South-southwest
Wind Speed: 5 - 10mph
Relative Humidity: 48.8%

Met conditions were obtained from a portable Extech Instrument, Model 45160.

Observations:

Reconnaissance of this site was performed from the following location:

Location 1: 2:30p.m. - 2:34p.m.

N: 29°42'910" W95°13'216"

Location was from the brown metal building across the street from MCC.

Conclusions and Recommendations:

No odors were noticeable and no visible emissions were observed from the above location during this reconnaissance investigation. In addition, no concerns were noted utilizing the GasFindIR camera. Therefore, no follow-up action will be required.

Attachments

Attachment 1: Field Log

No Violations Associated to this Investigation

Signed _____
Environmental Investigator

Date _____

Signed _____
Supervisor

Date _____

Attachments: (in order of final report submittal)

___ Enforcement Action Request (EAR)

___ Letter to Facility (specify type) : _____

Investigation Report

___ Sample Analysis Results

___ Manifests

___ NOR

___ Maps, Plans, Sketches

___ Photographs

___ Correspondence from the facility

___ Other (specify) :

Reference 24:

Texas Water Development Board. Report 365: Aquifers of the Gulf Coast of Texas.
February 2006. 1 page



Texas Water Development Board

Report 365

Aquifers of the Gulf Coast of Texas

edited by
Robert E. Mace,
Sarah C. Davidson,
Edward S. Angle, and
William F. Mullican, III

February 2006

Reference 25:

United States Department of Agriculture, Soil Conservation Service. Soil Survey of Harris County, Texas. August 1976. 4 pages.

SOIL SURVEY OF Harris County, Texas



**United States Department of Agriculture
Soil Conservation Service**

In cooperation with the

**Texas Agricultural Experiment Station and the
Harris County Flood Control District**

Index to Soil Mapping Units

	Page		Page
Ad—Addicks loam	11	Ka—Kaman clay	24
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Bo—Boy loamy fine sand	19	Ur—Urban land	31
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Gs—Gessner complex	21	Vs—Voss soils	33
Gu—Gessner-Urban land complex	21	Wo—Wockley fine sandy loam	33
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Hf—Hatliff loam	22		
HoA—Hockley fine sandy loam, 0 to 1 percent slopes	23		
HoB—Hockley fine sandy loam, 1 to 4 percent slopes	23		
Is—Ijam soils	24		

LcB—Lake Charles clay, 1 to 3 percent slopes. This is a gently sloping soil along ridges and natural drainageways. The soil areas are oblong and oval. They average 30 acres, but some are as large as 150 acres in size. The surface is plane to convex. The slope average is 2 percent, but some areas along drainageways have slopes of up to 4 percent. A mulch of fine, discrete, very hard aggregates is on the surface.

This soil has a slightly thinner surface layer than that described as representative of the Lake Charles series. The surface layer is about 30 inches thick. In the upper 18 inches it is very firm, neutral, black clay. In the lower 12 inches it is very firm, mildly alkaline, very dark gray clay. The layer below that is about 18 inches thick and consists of very firm, mildly alkaline, dark gray clay that has intersecting slickensides. The lower layer, to a depth of 60 inches, is very firm, mildly alkaline, gray clay that has mottles of olive brown and yellowish brown.

Included with this soil are small areas of Beaumont, Bernard, Midland, and Vamont soils, which make up less than 10 percent of any mapped area. Small areas, along drainageways, that have been eroded by water are also included.

This soil is used mainly for improved pasture and native pasture. Bermudagrass and dallisgrass are the principal improved pasture plants. Native pasture grasses are mainly ardropogons and paspalums.

This soil is somewhat poorly drained. Surface runoff is medium. Permeability and internal drainage are very slow. The available water capacity is high. Water erosion is a moderate hazard. When this soil is dry, deep, wide cracks form on the surface. Water enters rapidly through the cracks but enters very slowly when the soil is wet and the cracks are sealed.

This soil requires careful management to improve water intake and reduce runoff. Erosion reduces soil fertility and leaves the soil vulnerable to further erosion. If this soil is cultivated, terraces, contour farming, and protected terrace outlets are needed. Capability unit IIIe-1;

pasture and hayland group 7A; Blackland range site; woodland suitability group 2w9; Blackland woodland grazing group.

Lu—Lake Charles-Urban Land complex. This is a nearly level complex in broad, irregular areas that range from 20 acres to about 1,800 acres in size. Slopes are mainly 0 to 1 percent, but range from 0 to 3 percent in some areas leading to drainageways.

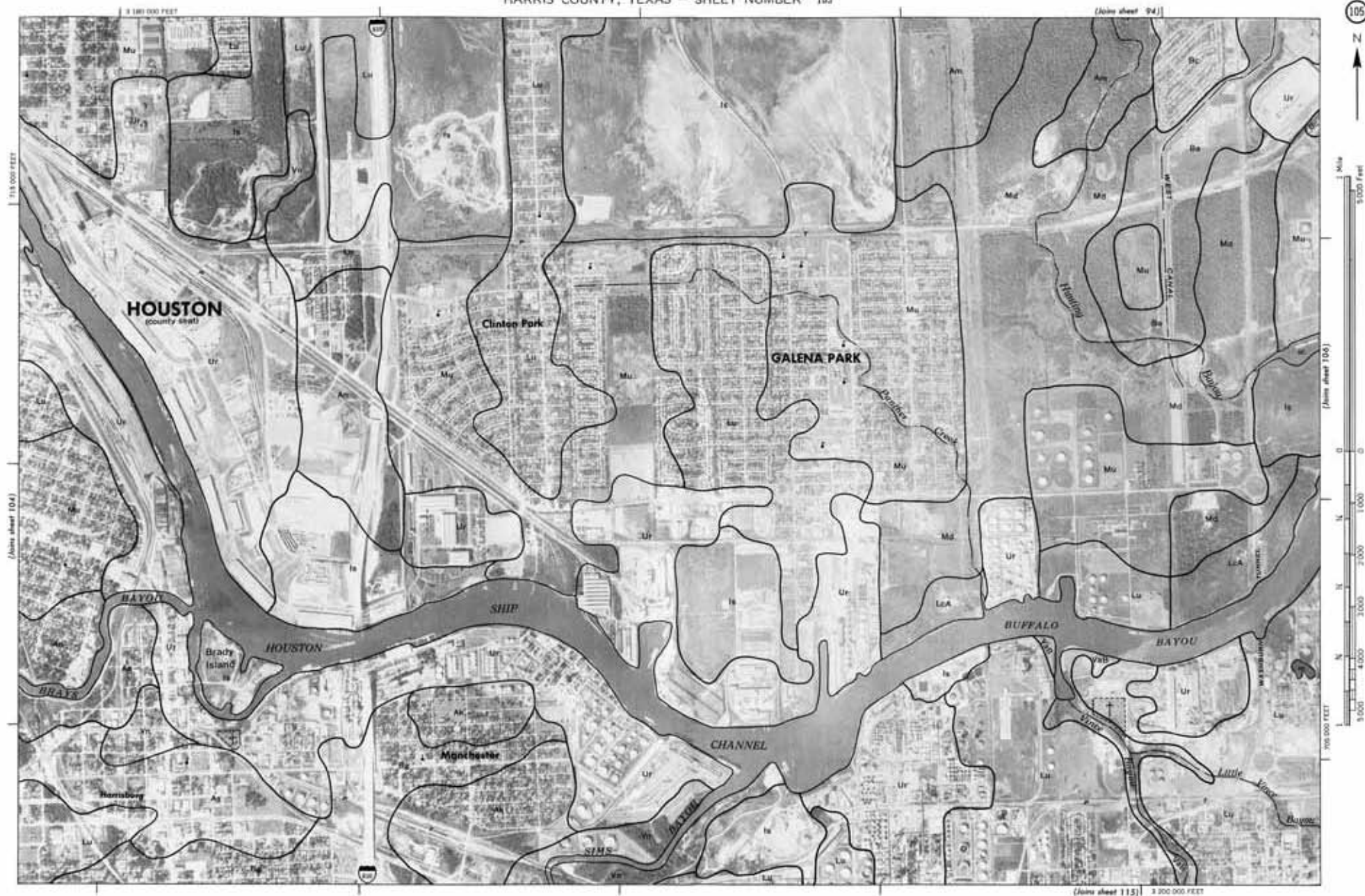
Lake Charles soils make up 20 to 85 percent of this unit; Urban land, 10 to 75 percent; and other soils, 15 percent or less. The areas making up this complex are so intricately mixed that separation was not feasible at the scale used in mapping.

The surface layer of the Lake Charles soil is about 36 inches thick. In the upper 22 inches it is very firm, neutral, black clay. In the lower 14 inches it is very firm, mildly alkaline, very dark gray clay. In the layer below that it is about 16 inches thick and is very firm, mildly alkaline, dark gray clay that has intersecting slickensides. The next layer, to a depth of 74 inches, is very firm, mildly alkaline, gray clay that has mottles of olive brown and yellowish brown.

Urban land consists of soils that have been altered or covered by buildings or other urban structures. Classifying these soils is not practical. Typical structures are single- and multiple-unit dwellings, streets, schools, churches, parking lots, office buildings, and shopping centers that are less than 40 acres in size. The Urban land includes remnants of Lake Charles soils that have been altered by cutting, filling, and grading in urban development. In many areas of this mapping unit 6 to 18 inches of fill material covers the natural soil.

Included with this complex in mapping are small areas of Beaumont, Bernard, Midland, and Vamont soils.

This mapping unit has severe limitations for urban development. The main limitation is the high shrink-swell potential of the clay, which results in buckled streets and sidewalks and cracked walls. Lawns and gardens are difficult to establish because of the high clay content of the soils.



Reference 26:

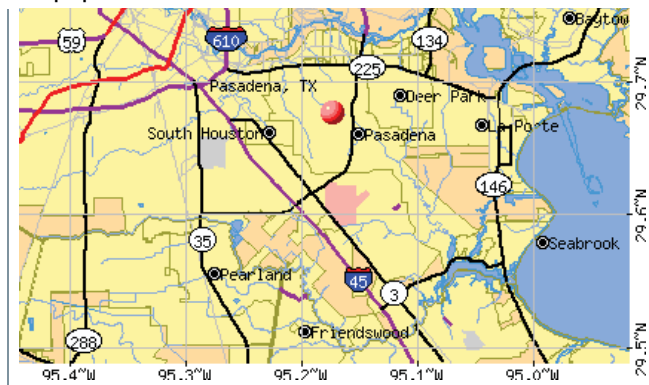
City-Data.com. Pasadena, Texas. Available at www.city-data.com. Accessed on October 26, 2010. 1 page.

[Harris County](#)

Population in July 2009: 145,789.
Population change since 2000: +2.9%

Males: 72,822 (50.0%)
Females: 72,967 (50.0%)

Median resident age: 29.2 years
Texas median age: 32.3 years



Zip codes: 77501, [77502](#), [77503](#), [77504](#), [77505](#), [77506](#), [77507](#), 77508.

[Pasadena Zip Code Map](#)

Estimated median household income in 2009: \$40,770 (it was \$38,522 in 2000)
Pasadena: \$40,770
Texas: \$48,259

Estimated per capita income in 2009: \$18,967

[Pasadena city income, earnings, and wages data](#)

Estimated median house or condo value in 2009: \$108,100 (it was \$67,600 in 2000)
Pasadena: \$108,100
Texas: \$125,800

Mean prices in 2009: All housing units: \$123,664; Detached houses: \$129,147; Townhouses or other attached units: \$108,003; In 2-unit structures: \$77,662; In 3-to-4-unit structures: \$164,856; In 5-or-more-unit structures: \$195,494; Mobile homes: \$43,622; Occupied boats, RVs, vans, etc.: \$68,345

Median gross rent in 2009: \$753.

Recent home sales, real estate maps, and home value estimator for zip codes: [77502](#), [77503](#), [77504](#), [77505](#), [77506](#).

[Pasadena, TX residents, houses, and apartments details](#)**Profiles of local businesses**

- [La Villa Ballroom](#)
- [Wuffy Walks](#)
- [Sweet Home Pet Sitting](#)

Put your [B&M business profile right here for free](#). 20,000 businesses already created their profiles!

Business Search - 14 Million verified businesses

Search for: near:

Reference 27:

TCEQ TNET: State of Texas Utilities, Districts, and Public Drinking Water Home Page. 56 pages.

4/7/2011

04/07/2011

11:15:49AM

Water System Data Sheet Report

Texas Commission on Environmental Quality

WSDSR

Water System Data Sheet

PWS ID	PWS Name	Central Registry RN
1010009	CITY OF GALENA PARK	RN101389799

Organization/Customer *	Central Registry CN
CITY OF GALENA PARK	CN600338248

* Regulatory mail will be addressed to this organization / person

Responsible Official **		Title	
R P BARRETT		MAYOR	
License Type		License Number	
Mailing Address:			
Street Address		C/O or Address Line 2	
City	State	Zip	
Business Phone	Other Phone	Other Phone Type	Email

** Regulatory mail will be addressed to this person

No PWS Primary Contact assigned to this PWS

Emergency Contact Name ****	Emergency Phone	Emergency Email
TERRY STEVENS		
License Type	License Number	

**** This contact information will be used only in the event of an emergency

Owner Type	Owner Type Options: AFFECTED COUNTIES, COUNTY, DISTRICT/AUTHORITY, EXEMPT, FEDERAL GOVERNMENT, INVESTOR, MUNICIPALITY, NATIVE AMERICAN, PRIVATE, SUBMETER \ ALLOCATION, STATE GOVERNMENT, NOT RETAIL PUBLIC UTILITIES, WATER SUPPLY CORPORATION, MISC/UNKNOWN
MUNICIPALITY	

System Type	System Type Options: SB 361, COMMUNITY, COMMUNITY (NON-GOVERNMENT OWNED), TRANSIENT/NON-COMMUNITY, NON-PUBLIC, NON-TRANSIENT/NON-COMMUNITY
COMMUNITY	

Customer	Customer	Population	# of	# of	# I/C
----------	----------	------------	------	------	-------

Class	Category	Served	Connect	Meters	w/other PWS
RESIDENTIAL	RESIDENTIAL AREA	10,592	3,308	3,093	1

Total Product (MGD)	Average Daily Consump.	Total Storage (MG)	Elev. Storage (MG)	Booster Pump Cap. (MGD)	Aux.Prod.Cap. Max.Pur.Cap.(MGD)	Pressure Tank Cap.(MG)
3.672	1.090	1.680	0.500	5.040	0.900	0.00000

Activity Status	Deactivation Date	Reason
ACTIVE		

Operator Grade	Number
WATER GRADE C GROUND	2

Last Survey Date	Surveyor	Survey Type	Code	Region	County	Def.Score
03/19/2009	BARRY PRICE	SURVEY		12	HARRIS	0
05/04/2006	BARRY PRICE	SURVEY		12	HARRIS	0
01/07/2005	LAN VU	SURVEY		12	HARRIS	0

(Entry Point)							
Entry Point	EP Name/Source Summation (Activity Status)	Plant Name (Activity Status)	WUD Plant Num	Chemical Mon Type	Chem Sample Point	Distribution Mon Type	Dist Sample Point
001	0.18 MG GST/EVANGELINE(A)	PLANT - 304 STEWART ST()	5078		No		No

Train:	(Unnamed)
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(Treatments)				
Disinfection Zone	Treatment Sequence	Objective	Process	Treatment
	1	C	443	INHIBITOR (HEXAMETAPHOSPHATE)
	2	D	403	GASEOUS CHLORINATION(PRE)

(Active Sources)							
Source Number	Source Name (Activity Status)		Operational Status	Source Type	Depth	Tested GPM	Rated GPM
G1010009C	3 - 304 STEWART(A)		D	G	1201	1250	1200
Drill Date		Well Data					
9/14/1949		EVANGELINE AQUIFER					
GPS Latitude (decimal)	GPS Longitude (decimal)	GPS Elevation	GPS Date	GPS Cert. No.	Seller		
29.734446	95.238232	34		01112901	Not a Purchased Source		
Source Number	Source Name (Activity Status)		Operational Status	Source Type	Depth	Tested GPM	Rated GPM
P1010009A	SW FROM CITY OF HOUSTON TRINITY RIVER(A)		O	S	0	0	0
Water Body		Segment Number			Surface Water Intake Type		
		()					
GPS Latitude (decimal)	GPS Longitude (decimal)	GPS Elevation	GPS Date	GPS Cert. No.	Seller		
0	0	0			1010013		

(Inactive/Offline Sources)			
SourceNumber	Name	Status	Depth
G1010009A	1 - 304 STEWART	E	680
G1010009B	2 - 304 STEWART	P	740

(Entry Point)							
Entry Point	EP Name/Source Summation (Activity Status)	Plant Name (Activity Status)	WUD Plant Num	Chemical Mon Type	Chem Sample Point	Distribution Mon Type	Dist Sample Point
002	1.0 MG GST/EVANGELINE(A)	PLANT - 1900 KEENE ST()	18934		No		No

Train:	(Unnamed)
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(Treatments)				
Disinfection Zone	Treatment Sequence	Objective	Process	Treatment
	1	D	401	GASEOUS CHLORINATION(POST)
	2	C	443	INHIBITOR (HEXAMETAPHOSPHATE)

(Active Sources)							
Source Number	Source Name (Activity Status)		Operational Status	Source Type	Depth	Tested GPM	Rated GPM
G1010009D	4 - 1900 KEENE ST / PLANT 2(A)		D	G	1009	1300	1300
Drill Date		Well Data					
2/0/1959		EVANGELINE AQUIFER					
GPS Latitude (decimal)	GPS Longitude (decimal)	GPS Elevation	GPS Date	GPS Cert. No.	Seller		
29.746165	95.237748	33		01112901	Not a Purchased Source		
Source Number	Source Name (Activity Status)		Operational Status	Source Type	Depth	Tested GPM	Rated GPM
P1010009B	SW FROM CITY OF HOUSTON(A)		O	S	0	0	0
Water Body		Segment Number			Surface Water Intake Type		
		(I)					
GPS Latitude (decimal)	GPS Longitude (decimal)	GPS Elevation	GPS Date	GPS Cert. No.	Seller		
0	0	0			1010013		

(Inactive/Offline Sources)
(No inactive Sources associated with this EP/Plant)

Code Explanations
Monitoring Type Codes: (GW) GROUNDWATER , (GWP) GROUNDWATER - PURCHASED , (GUP) GROUNDWATER UNDER THE INFLUENCE - PURCHASED , (SWP) SURFACE WATER - PURCHASED , (GU) GROUNDWATER UNDER THE INFLUENCE OF SURFACE WATER , (N) NO SOURCES , (SW) SURFACE WATER
Activity Status Codes: (A) ACTIVE , (C) CCN CANCELLED , (D) DELETED/DISSOLVED , (G) SB 361 , (I) INACTIVE , (M) MERGED/ANNEXED , (N) NON-PUBLIC , (P) PROPOSED , (U) UNKNOWN , (W) UTILITY WATER SYS XFER
Operational Status Codes: (C) CAPPED , (D) DEMAND , (E) EMERGENCY , (F) FORMER PWS SOURCE , (I) INACTIVE PWS SYSTEM , (N) NON-DRINKING WATER , (O) OPERATING , (P) PLUGGED , (T) TEST , (Y) PWS NOT ACTIVE AND NOT EXPECTED TO BE SO
Source Types: (G) GROUND WATER , (S) SURFACE WATER , (U) GROUND WATER UNDER THE INFLUENCE

- End of Report -

At the time of your query this data was the most current information available from our database, which is in real time. Every effort was made to retrieve it according to your query. Thank-you for using WUD.

4/7/2011

04/07/2011

11:18:13AM

Water System Data Sheet Report

Texas Commission on Environmental Quality

Water System Data Sheet

WSDSR

PWS ID	PWS Name	Central Registry RN
1010293	CITY OF PASADENA	RN101394237

Organization/Customer *	Central Registry CN
CITY OF PASADENA	CN600242648

* Regulatory mail will be addressed to this organization / person

Responsible Official **		Title	
JOHNNY ISBELL		MAYOR	
License Type	License Number		
Mailing Address:			
Street Address		C/O or Address Line 2	
City	State	Zip	
Business Phone	Other Phone	Other Phone Type	Email

** Regulatory mail will be addressed to this person

PWS Contact - If different than above ***		Title	
RICK HELTON			
License Type	License Number		
Mailing Address for PWS Primary Contact:			
Street Address		C/O or Address Line 2	
PO BOX 672		ATTN WATER DEPT	
City	State	Zip	
PASADENA	TX	77501 - 0672	
Business Phone	Other Phone	Other Phone Type	Email
	(713) 477-7639(713) 475-7286	OTHER	

*** Copies of most regulatory mail will be addressed to this person

Emergency Contact Name ****	Emergency Phone	Emergency Email
RICK HELTON		jgilbert@ci.pasadena.tx.us

License Type	License Number

**** This contact information will be used only in the event of an emergency

Owner Type	Owner Type Options: AFFECTED COUNTIES, COUNTY, DISTRICT/AUTHORITY, EXEMPT, FEDERAL GOVERNMENT, INVESTOR, MUNICIPALITY, NATIVE AMERICAN, PRIVATE, SUBMETER \ ALLOCATION, STATE GOVERNMENT, NOT RETAIL PUBLIC UTILITIES, WATER SUPPLY CORPORATION, MISC/UNKNOWN
MUNICIPALITY	

System Type	System Type Options: SB 361, COMMUNITY, COMMUNITY (NON-GOVERNMENT OWNED), TRANSIENT/NON-COMMUNITY, NON-PUBLIC, NON-TRANSIENT/NON-COMMUNITY
COMMUNITY	

Customer Class	Customer Category	Population Served	# of Connect	# of Meters	# I/C w/other PWS
RESIDENTIAL	RESIDENTIAL AREA	144,174	34,285	36,105	
RESIDENTIAL	WHOLESALE (TREATED WATER)	14,082	32,576	2	2

Total Product (MGD)	Average Daily Consump.	Total Storage (MG)	Elev. Storage (MG)	Booster Pump Cap. (MGD)	Aux.Prod.Cap. Max.Pur.Cap.(MGD)	Pressure Tank Cap.(MG)
8.784	15.532	15.500	6.250	26.784	35.624	0.03000

Activity Status	Deactivation Date	Reason
ACTIVE		

Operator Grade	Number
WATER GRADE B GROUND	3
WATER GRADE C GROUND	4

Last Survey Date	Surveyor	Survey Type	Code	Region	County	Def.Score
06/09/2009	HUYEN LUU	SURVEY		12	HARRIS	0
02/21/2006	BARRY PRICE	SURVEY		12	HARRIS	9
06/26/2003	TOM LAMB	SURVEY		12	HARRIS	7

(Entry Point)							
Entry Point	EP Name/Source Summation (Activity Status)	Plant Name (Activity Status)	WUD Plant Num	Chemical Mon Type	Chem Sample Point	Distribution Mon Type	Dist Sample Point
001	RICHEY METERING STATION / TRINITY & SAN JACINTO RIVER(A)	RICHEY RD MS()	15917		No		No

Train:	(Unnamed)
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(Treatments)				
Disinfection Zone	Treatment Sequence	Objective	Process	Treatment
	1	D	401	GASEOUS CHLORINATION(POST)

(Active Sources)							
Source Number	Source Name (Activity Status)	Operational Status	Source Type	Depth	Tested GPM	Rated GPM	
P1010293A	SW FROM CITY OF HOUSTON - 208 RICHEY RD(A)	O	S	0	0	0	
Water Body		Segment Number			Surface Water Intake Type		
		()					
GPS Latitude (decimal)	GPS Longitude (decimal)	GPS Elevation	GPS Date	GPS Cert. No.	Seller		
0	0	0			1010013		

(Inactive/Offline Sources)			
SourceNumber	Name	Status	Depth
G1010293K	1 - CASCADE	P	0
G1010293I	1 - PASADENA	P	0
G1010293J	1 - WATER ST	P	0
G1010293H	2 - WEST SIDE	P	0

(Entry Point)							
Entry Point	EP Name/Source Summation (Activity Status)	Plant Name (Activity Status)	WUD Plant Num	Chemical Mon Type	Chem Sample Point	Distribution Mon Type	Dist Sample Point
002	ALLEN GENOA METERING STATION/TRINITY & SAN JACINTO RIV/EWPP(I)	GENOA MS()	17960		No		No

Train:	(Unnamed)
--------	-----------

(Treatments)				
Disinfection Zone	Treatment Sequence	Objective	Process	Treatment
(No treatments listed)				

(Active Sources)
(No active Sources associated with this EP/Plant)

(Inactive/Offline Sources)			
SourceNumber	Name	Status	Depth
P1010293B	SW FROM CITY OF HOUSTON - 5305 ALLEN GENOA MS / EMERGENCY	E	0

(Entry Point)							
Entry Point	EP Name/Source Summation (Activity Status)	Plant Name (Activity Status)	WUD Plant Num	Chemical Mon Type	Chem Sample Point	Distribution Mon Type	Dist Sample Point
003	GST / GULF COAST(A)	1729 RED BLUFF RD()	5510		No		No

Train:	(Unnamed)
--------	------------------

(Treatments)				
Disinfection Zone	Treatment Sequence	Objective	Process	Treatment
	1	D	403	GASEOUS CHLORINATION(PRE)

(Active Sources)						
Source Number	Source Name (Activity Status)	Operational Status	Source Type	Depth	Tested GPM	Rated GPM
G1010293A	1 - 1729 RED BLUFF RD(A)	D	G	1264	700	800
Drill Date		Well Data				
2/0/1950		EVANGELINE				
GPS Latitude (decimal)	GPS Longitude (decimal)	GPS Elevation	GPS Date	GPS Cert. No.	Seller	
29.704999	95.186943	36			Not a Purchased Source	

(Inactive/Offline Sources)
(No inactive Sources associated with this EP/Plant)

(Entry Point)							
Entry Point	EP Name/Source Summation (Activity Status)	Plant Name (Activity Status)	WUD Plant Num	Chemical Mon Type	Chem Sample Point	Distribution Mon Type	Dist Sample Point
004	GST / GULF COAST(A)	DEEPWATER()	5503		No		No

Train:	(Unnamed)
--------	------------------

(Treatments)				
Disinfection Zone	Treatment Sequence	Objective	Process	Treatment
	1	D	403	GASEOUS CHLORINATION(PRE)

(Active Sources)							
Source Number	Source Name (Activity Status)	Operational Status	Source Type	Depth	Tested GPM	Rated GPM	
G1010293B	2 - 3200 FLAMBOROUGH / DEEPWATER(A)	D	G	1269	950	1000	
Drill Date		Well Data					
9/29/1953		EVANGELINE					
GPS Latitude (decimal)	GPS Longitude (decimal)	GPS Elevation	GPS Date	GPS Cert. No.	Seller		
29.70056	95.16666	37			Not a Purchased Source		

(Inactive/Offline Sources)	
(No inactive Sources associated with this EP/Plant)	

(Entry Point)							
Entry Point	EP Name/Source Summation (Activity Status)	Plant Name (Activity Status)	WUD Plant Num	Chemical Mon Type	Chem Sample Point	Distribution Mon Type	Dist Sample Point
005	GST / GULF COAST(A)	SYCAMORE()	5504		No		No

Train:	(Unnamed)
--------	------------------

(Treatments)				
Disinfection Zone	Treatment Sequence	Objective	Process	Treatment
	1	D	403	GASEOUS CHLORINATION(PRE)

(Active Sources)						
Source Number	Source Name (Activity Status)	Operational Status	Source Type	Depth	Tested GPM	Rated GPM
G1010293C	3 - 6302 SYCAMORE(A)	D	G	1355	1200	1300
Drill Date		Well Data				
6/0/1964		EVANGELINE				
GPS Latitude (decimal)	GPS Longitude (decimal)	GPS Elevation	GPS Date	GPS Cert. No.	Seller	
29.70056	95.16583	37			Not a Purchased Source	

(Inactive/Offline Sources)
(No inactive Sources associated with this EP/Plant)

(Entry Point)							
Entry Point	EP Name/Source Summation (Activity Status)	Plant Name (Activity Status)	WUD Plant Num	Chemical Mon Type	Chem Sample Point	Distribution Mon Type	Dist Sample Point
006	GST / GULF COAST(A)	PANSY()	5509		No		No

Train:	(Unnamed)
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(Treatments)				
Disinfection Zone	Treatment Sequence	Objective	Process	Treatment
	1	D	403	GASEOUS CHLORINATION(PRE)

(Active Sources)						
Source Number	Source Name (Activity Status)	Operational Status	Source Type	Depth	Tested GPM	Rated GPM
G1010293D	4 - 2700 PANSY(A)	D	G	526	500	1280
Drill Date		Well Data				
5/15/1952		CHICOT				
GPS Latitude (decimal)	GPS Longitude (decimal)	GPS Elevation	GPS Date	GPS Cert. No.	Seller	
29.67056	95.14306	35			Not a Purchased Source	

(Inactive/Offline Sources)
(No inactive Sources associated with this EP/Plant)

(Entry Point)							
Entry Point	EP Name/Source Summation (Activity Status)	Plant Name (Activity Status)	WUD Plant Num	Chemical Mon Type	Chem Sample Point	Distribution Mon Type	Dist Sample Point
007	GST / GULF COAST / SAN JACINTO & TRINITY RIVER(A)	WEST SIDE()	5505		No		No

Train:	(Unnamed)
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(Treatments)				
Disinfection Zone	Treatment Sequence	Objective	Process	Treatment
	1	D	403	GASEOUS CHLORINATION(PRE)

(Active Sources)							
Source Number	Source Name (Activity Status)	Operational Status	Source Type	Depth	Tested GPM	Rated GPM	
G1010293E	5 - 3000 WEST SIDE(A)	D	G	1160	1350	1500	
Drill Date		Well Data					
6/0/1966		EVANGELINE					
GPS Latitude (decimal)	GPS Longitude (decimal)	GPS Elevation	GPS Date	GPS Cert. No.	Seller		
29.67083	95.14111	35			Not a Purchased Source		
Source Number	Source Name (Activity Status)	Operational Status	Source Type	Depth	Tested GPM	Rated GPM	
P1010293C	SAN JACINTO / TRINITY RIVER(A)	O	S	0	0	0	
Water Body		Segment Number			Surface Water Intake Type		
		()					
GPS Latitude (decimal)	GPS Longitude (decimal)	GPS Elevation	GPS Date	GPS Cert. No.	Seller		
0	0	0			1010013		

(Inactive/Offline Sources)			
SourceNumber	Name	Status	Depth
G1010293G	1 - WEST SIDE	P	0

(Entry Point)							
Entry Point	EP Name/Source Summation (Activity Status)	Plant Name (Activity Status)	WUD Plant Num	Chemical Mon Type	Chem Sample Point	Distribution Mon Type	Dist Sample Point
008	GST / GULF COAST / SAN JACINTO & TRINITY(A)	GARNER()	5507		No		No

Train:	(Unnamed)
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(Treatments)				
Disinfection Zone	Treatment Sequence	Objective	Process	Treatment
	1	D	403	GASEOUS CHLORINATION(PRE)

(Active Sources)							
Source Number	Source Name (Activity Status)	Operational Status	Source Type	Depth	Tested GPM	Rated GPM	
G1010293F	6 - 305 GARNER(A)	D	G	1565	1400	1500	
Drill Date		Well Data					
12/6/1954		EVANGELINE					
GPS Latitude (decimal)	GPS Longitude (decimal)	GPS Elevation	GPS Date	GPS Cert. No.	Seller		
29.67139	95.16333	42			Not a Purchased Source		
Source Number	Source Name (Activity Status)	Operational Status	Source Type	Depth	Tested GPM	Rated GPM	
P1010293D	SAN JACINTO / TRINITY(A)	O	S	0	0	0	
Water Body		Segment Number			Surface Water Intake Type		
		()					
GPS Latitude (decimal)	GPS Longitude (decimal)	GPS Elevation	GPS Date	GPS Cert. No.	Seller		
0	0	0			1010013		

(Inactive/Offline Sources)			
SourceNumber	Name	Status	Depth
G1010293L	1 - GARNER	P	0

(Entry Point)							
Entry Point	EP Name/Source Summation (Activity Status)	Plant Name (Activity Status)	WUD Plant Num	Chemical Mon Type	Chem Sample Point	Distribution Mon Type	Dist Sample Point
009	METER STATION / TRINITY RIVER(A)	GENOA RED BLUFF M.S.()	20082		No		No

(Active Sources)						
Source Number	Source Name (Activity Status)	Operational Status	Source Type	Depth	Tested GPM	Rated GPM
P1010293E	SW FROM CITY OF HOUSTON - 3101 GENOA RED BLUFF MS(A)	O	S	0	0	0
Water Body		Segment Number		Surface Water Intake Type		
		()				
GPS Latitude (decimal)	GPS Longitude (decimal)	GPS Elevation	GPS Date	GPS Cert. No.	Seller	
0	0	0			1010013	

(Inactive/Offline Sources)	
(No inactive Sources associated with this EP/Plant)	

(Entry Point)							
Entry Point	EP Name/Source Summation (Activity Status)	Plant Name (Activity Status)	WUD Plant Num	Chemical Mon Type	Chem Sample Point	Distribution Mon Type	Dist Sample Point
010	GST / GULF COAST(I)	EL JARDIN()	20083		No		No

(Active Sources)
(No active Sources associated with this EP/Plant)

(Inactive/Offline Sources)			
SourceNumber	Name	Status	Depth
G1010293M	519 EL JARDIN DR	E	612

Sources not Associated with a Plant or Entry Point				
Source Number	Name	Activity Status	Operational Status	Source Type
P1010293F	DELETE	I	A	S

Code Explanations
Monitoring Type Codes: (GW) GROUNDWATER , (GWP) GROUNDWATER - PURCHASED , (GUP) GROUNDWATER UNDER THE INFLUENCE - PURCHASED , (SWP) SURFACE WATER - PURCHASED , (GU) GROUNDWATER UNDER THE INFLUENCE OF SURFACE WATER , (N) NO SOURCES , (SW) SURFACE WATER
Activity Status Codes: (A) ACTIVE , (C) CCN CANCELLED , (D) DELETED/DISSOLVED , (G) SB 361 , (I) INACTIVE , (M) MERGED/ANNEXED , (N) NON-PUBLIC , (P) PROPOSED , (U) UNKNOWN , (W) UTILITY WATER SYS XFER
Operational Status Codes: (C) CAPPED , (D) DEMAND , (E) EMERGENCY , (F) FORMER PWS SOURCE , (I) INACTIVE PWS SYSTEM , (N) NON-DRINKING WATER , (O) OPERATING , (P) PLUGGED , (T) TEST , (Y) PWS NOT ACTIVE AND NOT EXPECTED TO BE SO
Source Types: (G) GROUND WATER , (S) SURFACE WATER , (U) GROUND WATER UNDER THE INFLUENCE

- End of Report -

At the time of your query this data was the most current information available from our database, which is in real time. Every effort was made to retrieve it according to your query. Thank-you for using WUD.

4/7/2011

04/07/2011

11:25:03AM

Water System Data Sheet Report

Texas Commission on Environmental Quality

Water System Data Sheet

WSDSR

PWS ID	PWS Name	Central Registry RN
1010294	CITY OF SOUTH HOUSTON 	RN101395358

Organization/Customer *	Central Registry CN
CITY OF SOUTH HOUSTON	CN600548390

* Regulatory mail will be addressed to this organization / person

Responsible Official **		Title	
JOE SOTO		MAYOR	
License Type		License Number	
Mailing Address:			
Street Address		C/O or Address Line 2	
PO BOX 238		C/O ALFRED GONZALES SUPERINTENDENT	
City	State	Zip	
SOUTH HOUSTON	TX	77587 - 0238	
Business Phone	Other Phone	Other Phone Type	Email
(713) 947-7700			

** Regulatory mail will be addressed to this person

PWS Contact - If different than above ***		Title	
ALFRED GONZALES			
License Type		License Number	
Mailing Address for PWS Primary Contact:			
Street Address		C/O or Address Line 2	
City	State	Zip	
Business Phone	Other Phone	Other Phone Type	Email

*** Copies of most regulatory mail will be addressed to this person

No Emergency Contact assigned to this PWS
--

Owner Type	Owner Type Options: AFFECTED COUNTIES, COUNTY, DISTRICT/AUTHORITY, EXEMPT, FEDERAL GOVERNMENT, INVESTOR, MUNICIPALITY, NATIVE AMERICAN, PRIVATE, SUBMETER \ ALLOCATION, STATE GOVERNMENT, NOT RETAIL PUBLIC UTILITIES, WATER SUPPLY CORPORATION, MISC/UNKNOWN
MUNICIPALITY	

System Type	System Type Options: SB 361, COMMUNITY, COMMUNITY (NON-GOVERNMENT OWNED), TRANSIENT/NON-COMMUNITY, NON-PUBLIC, NON-TRANSIENT/NON-COMMUNITY
COMMUNITY	

Customer Class	Customer Category	Population Served	# of Connect	# of Meters	# I/C w/other PWS
RESIDENTIAL	RESIDENTIAL AREA	13,116	4,372	4,372	1

Total Product (MGD)	Average Daily Consump.	Total Storage (MG)	Elev. Storage (MG)	Booster Pump Cap. (MGD)	Aux.Prod.Cap. Max.Pur.Cap.(MGD)	Pressure Tank Cap.(MG)
5.940	1.736	4.687	1.000	11.952	0.000	0.09000

Activity Status	Deactivation Date	Reason
ACTIVE		

Operator Grade	Number
WATER GRADE C GROUND	2
WATER GRADE D	1

Last Survey Date	Surveyor	Survey Type	Code	Region	County	Def.Score
04/02/2008	ERESHA DESILVA	SURVEY		12	HARRIS	9
03/01/2005	MIKE DAVIS	SURVEY		12	HARRIS	2
02/11/2003	MIKE DAVIS	SURVEY		12	HARRIS	7

(Entry Point)							
Entry Point	EP Name/Source Summation (Activity Status)	Plant Name (Activity Status)	WUD Plant Num	Chemical Mon Type	Chem Sample Point	Distribution Mon Type	Dist Sample Point
001	EP 001 / TRINITY RIVER(D)	CITY OF HOUSTON METER()	17961		No		No

Train:	(Unnamed)
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(Treatments)				
Disinfection Zone	Treatment Sequence	Objective	Process	Treatment
	1	D	403	GASEOUS CHLORINATION(PRE)

(Active Sources)
(No active Sources associated with this EP/Plant)

(Inactive/Offline Sources)
(No inactive Sources associated with this EP/Plant)

(Entry Point)							
Entry Point	EP Name/Source Summation (Activity Status)	Plant Name (Activity Status)	WUD Plant Num	Chemical Mon Type	Chem Sample Point	Distribution Mon Type	Dist Sample Point
002	EP 002 / SAN JACINTO RIV(D)	(No plants for this EP)			No		No

(Active Sources)
(No active Sources associated with this EP/Plant)

(Inactive/Offline Sources)
(No inactive Sources associated with this EP/Plant)

(Entry Point)							
Entry Point	EP Name/Source Summation (Activity Status)	Plant Name (Activity Status)	WUD Plant Num	Chemical Mon Type	Chem Sample Point	Distribution Mon Type	Dist Sample Point
003	1 MG GST / GULF COAST, TRINITY/SAN JACINTO RIVER(A)	CITY OF HOUSTON METER()	17961		No		No

Train:	(Unnamed)
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(Treatments)				
Disinfection Zone	Treatment Sequence	Objective	Process	Treatment
	1	D	403	GASEOUS CHLORINATION(PRE)

(Active Sources)
(No active Sources associated with this EP/Plant)

(Inactive/Offline Sources)
(No inactive Sources associated with this EP/Plant)

(Entry Point)							
Entry Point	EP Name/Source Summation (Activity Status)	Plant Name (Activity Status)	WUD Plant Num	Chemical Mon Type	Chem Sample Point	Distribution Mon Type	Dist Sample Point
003	1 MG GST / GULF COAST, TRINITY/SAN JACINTO RIVER(A)	PLANT 1 - 631 VIRGINIA()	5514		No		No

Train:	(Unnamed)
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(Treatments)				
Disinfection Zone	Treatment Sequence	Objective	Process	Treatment
	1	D	403	GASEOUS CHLORINATION(PRE)

(Active Sources)							
Source Number	Source Name (Activity Status)		Operational Status	Source Type	Depth	Tested GPM	Rated GPM
G1010294D	1 - 631 VIRGINIA(A)		O	G	1325	550	1100
Drill Date		Well Data					
0/0/0							
GPS Latitude (decimal)	GPS Longitude (decimal)	GPS Elevation	GPS Date	GPS Cert. No.	Seller		
29.66389	95.21972	0			Not a Purchased Source		
Source Number	Source Name (Activity Status)		Operational Status	Source Type	Depth	Tested GPM	Rated GPM
P1010294A	CITY OF HOUSTON SW(A)		O	S	0	0	0
Water Body		Segment Number			Surface Water Intake Type		
		()					
GPS Latitude (decimal)	GPS Longitude (decimal)	GPS Elevation	GPS Date	GPS Cert. No.	Seller		
0	0	0			1010013		

(Inactive/Offline Sources)	
(No inactive Sources associated with this EP/Plant)	

(Entry Point)							
Entry Point	EP Name/Source Summation (Activity Status)	Plant Name (Activity Status)	WUD Plant Num	Chemical Mon Type	Chem Sample Point	Distribution Mon Type	Dist Sample Point
004	0.57MG GST / GULF COAST, TRINITY/SAN JACINTO RIVER(A)	CITY OF HOUSTON METER()	17961		No		No

Train:	(Unnamed)
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(Treatments)				
Disinfection Zone	Treatment Sequence	Objective	Process	Treatment
	1	D	403	GASEOUS CHLORINATION(PRE)

(Active Sources)
(No active Sources associated with this EP/Plant)

(Inactive/Offline Sources)
(No inactive Sources associated with this EP/Plant)

(Entry Point)							
Entry Point	EP Name/Source Summation (Activity Status)	Plant Name (Activity Status)	WUD Plant Num	Chemical Mon Type	Chem Sample Point	Distribution Mon Type	Dist Sample Point
004	0.57MG GST / GULF COAST, TRINITY/SAN JACINTO RIVER(A)	PLANT 2 - 902 SPENCER()	5513		No		No

Train:	(Unnamed)
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(Treatments)				
Disinfection Zone	Treatment Sequence	Objective	Process	Treatment
	1	D	403	GASEOUS CHLORINATION(PRE)

(Active Sources)							
Source Number	Source Name (Activity Status)		Operational Status	Source Type	Depth	Tested GPM	Rated GPM
G1010294A	2 - 902 SPENCER(A)		O	G	1203	700	600
Drill Date		Well Data					
3/29/1963							
GPS Latitude (decimal)	GPS Longitude (decimal)	GPS Elevation	GPS Date	GPS Cert. No.	Seller		
29.66028	95.2125	36			Not a Purchased Source		
Source Number	Source Name (Activity Status)		Operational Status	Source Type	Depth	Tested GPM	Rated GPM
P1010294A	CITY OF HOUSTON SW(A)		O	S	0	0	0
Water Body		Segment Number			Surface Water Intake Type		
		()					
GPS Latitude (decimal)	GPS Longitude (decimal)	GPS Elevation	GPS Date	GPS Cert. No.	Seller		
0	0	0			1010013		

(Inactive/Offline Sources)
(No inactive Sources associated with this EP/Plant)

(Entry Point)							
Entry Point	EP Name/Source Summation (Activity Status)	Plant Name (Activity Status)	WUD Plant Num	Chemical Mon Type	Chem Sample Point	Distribution Mon Type	Dist Sample Point
005	0.667MG GST / GULF COAST, TRINITY/SAN JACINTO RIVER(A)	CITY OF HOUSTON METER()	17961		No		No

Train:	(Unnamed)
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(Treatments)				
Disinfection Zone	Treatment Sequence	Objective	Process	Treatment
	1	D	403	GASEOUS CHLORINATION(PRE)

(Active Sources)
(No active Sources associated with this EP/Plant)

(Inactive/Offline Sources)
(No inactive Sources associated with this EP/Plant)

(Entry Point)							
Entry Point	EP Name/Source Summation (Activity Status)	Plant Name (Activity Status)	WUD Plant Num	Chemical Mon Type	Chem Sample Point	Distribution Mon Type	Dist Sample Point
005	0.667MG GST / GULF COAST, TRINITY/SAN JACINTO RIVER(A)	PLANT 4 - 1401 AVE G()	5511		No		No

Train:	(Unnamed)
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(Treatments)				
Disinfection Zone	Treatment Sequence	Objective	Process	Treatment
	1	D	403	GASEOUS CHLORINATION(PRE)

(Active Sources)							
Source Number	Source Name (Activity Status)		Operational Status	Source Type	Depth	Tested GPM	Rated GPM
G1010294B	4 - 1401 AVE G(A)		O	G	1205	1050	900
Drill Date		Well Data					
7/12/1982							
GPS Latitude (decimal)	GPS Longitude (decimal)	GPS Elevation	GPS Date	GPS Cert. No.	Seller		
29.66389	95.23972	35			Not a Purchased Source		
Source Number	Source Name (Activity Status)		Operational Status	Source Type	Depth	Tested GPM	Rated GPM
P1010294A	CITY OF HOUSTON SW(A)		O	S	0	0	0
Water Body		Segment Number			Surface Water Intake Type		
		()					
GPS Latitude (decimal)	GPS Longitude (decimal)	GPS Elevation	GPS Date	GPS Cert. No.	Seller		
0	0	0			1010013		

(Inactive/Offline Sources)	
(No inactive Sources associated with this EP/Plant)	

(Entry Point)							
Entry Point	EP Name/Source Summation (Activity Status)	Plant Name (Activity Status)	WUD Plant Num	Chemical Mon Type	Chem Sample Point	Distribution Mon Type	Dist Sample Point
006	0.1MG GST / GULF COAST, TRINITY/SAN JACINTO RIVER(A)	CITY OF HOUSTON METER()	17961		No		No

Train:	(Unnamed)
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(Treatments)				
Disinfection Zone	Treatment Sequence	Objective	Process	Treatment
	1	D	403	GASEOUS CHLORINATION(PRE)

(Active Sources)
(No active Sources associated with this EP/Plant)

(Inactive/Offline Sources)
(No inactive Sources associated with this EP/Plant)

(Entry Point)							
Entry Point	EP Name/Source Summation (Activity Status)	Plant Name (Activity Status)	WUD Plant Num	Chemical Mon Type	Chem Sample Point	Distribution Mon Type	Dist Sample Point
006	0.1MG GST / GULF COAST, TRINITY/SAN JACINTO RIVER(A)	PLANT 5 - 351 TEXAS()	5512		No		No

Train:	(Unnamed)
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(Treatments)				
Disinfection Zone	Treatment Sequence	Objective	Process	Treatment
	1	D	403	GASEOUS CHLORINATION(PRE)

(Active Sources)							
Source Number	Source Name (Activity Status)	Operational Status	Source Type	Depth	Tested GPM	Rated GPM	
G1010294C	5 - 351 TEXAS AVE(A)	O	G	1203	1150	900	
Drill Date		Well Data					
4/22/1958							
GPS Latitude (decimal)	GPS Longitude (decimal)	GPS Elevation	GPS Date	GPS Cert. No.	Seller		
29.65278	95.2325	0			Not a Purchased Source		
Source Number	Source Name (Activity Status)	Operational Status	Source Type	Depth	Tested GPM	Rated GPM	
P1010294A	CITY OF HOUSTON SW(A)	O	S	0	0	0	
Water Body		Segment Number			Surface Water Intake Type		
		()					
GPS Latitude (decimal)	GPS Longitude (decimal)	GPS Elevation	GPS Date	GPS Cert. No.	Seller		
0	0	0			1010013		

(Inactive/Offline Sources)	
(No inactive Sources associated with this EP/Plant)	

(Entry Point)							
Entry Point	EP Name/Source Summation (Activity Status)	Plant Name (Activity Status)	WUD Plant Num	Chemical Mon Type	Chem Sample Point	Distribution Mon Type	Dist Sample Point
007	0.45MG GST / GULF COAST, TRINITY/SAN JACINTO RIVER(A)	CITY OF HOUSTON METER()	17961		No		No

Train:	(Unnamed)
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(Treatments)				
Disinfection Zone	Treatment Sequence	Objective	Process	Treatment
	1	D	403	GASEOUS CHLORINATION(PRE)

(Active Sources)
(No active Sources associated with this EP/Plant)

(Inactive/Offline Sources)
(No inactive Sources associated with this EP/Plant)

(Entry Point)							
Entry Point	EP Name/Source Summation (Activity Status)	Plant Name (Activity Status)	WUD Plant Num	Chemical Mon Type	Chem Sample Point	Distribution Mon Type	Dist Sample Point
007	0.45MG GST / GULF COAST, TRINITY/SAN JACINTO RIVER(A)	PLANT 3 - 804 NEVADA()	5515		No		No

Train:	(Unnamed)
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(Treatments)				
Disinfection Zone	Treatment Sequence	Objective	Process	Treatment
	1	D	403	GASEOUS CHLORINATION(PRE)

(Active Sources)							
Source Number	Source Name (Activity Status)		Operational Status	Source Type	Depth	Tested GPM	Rated GPM
G1010294E	3 - 804 NEVADA(A)		O	G	1413	675	600
Drill Date		Well Data					
9/27/1968							
GPS Latitude (decimal)	GPS Longitude (decimal)	GPS Elevation	GPS Date	GPS Cert. No.	Seller		
29.66139	95.23055	30			Not a Purchased Source		
Source Number	Source Name (Activity Status)		Operational Status	Source Type	Depth	Tested GPM	Rated GPM
P1010294A	CITY OF HOUSTON SW(A)		O	S	0	0	0
Water Body		Segment Number			Surface Water Intake Type		
		()					
GPS Latitude (decimal)	GPS Longitude (decimal)	GPS Elevation	GPS Date	GPS Cert. No.	Seller		
0	0	0			1010013		

(Inactive/Offline Sources)
(No inactive Sources associated with this EP/Plant)

Code Explanations
Monitoring Type Codes: (GW) GROUNDWATER , (GWP) GROUNDWATER - PURCHASED , (GUP) GROUNDWATER UNDER THE INFLUENCE - PURCHASED , (SWP) SURFACE WATER - PURCHASED , (GU) GROUNDWATER UNDER THE INFLUENCE OF SURFACE WATER , (N) NO SOURCES , (SW) SURFACE WATER
Activity Status Codes: (A) ACTIVE , (C) CCN CANCELLED , (D) DELETED/DISSOLVED , (G) SB 361 , (I) INACTIVE , (M) MERGED/ANNEXED , (N) NON-PUBLIC , (P) PROPOSED , (U) UNKNOWN , (W) UTILITY WATER SYS XFER
Operational Status Codes: (C) CAPPED , (D) DEMAND , (E) EMERGENCY , (F) FORMER PWS SOURCE , (I) INACTIVE PWS SYSTEM , (N) NON-DRINKING WATER , (O) OPERATING , (P) PLUGGED , (T) TEST , (Y) PWS NOT ACTIVE AND NOT EXPECTED TO BE SO
Source Types: (G) GROUND WATER , (S) SURFACE WATER , (U) GROUND WATER UNDER THE INFLUENCE

- End of Report -

At the time of your query this data was the most current information available from our database, which is in real time. Every effort was made to retrieve it according to your query. Thank-you for using WUD.

4/7/2011

04/07/2011

11:19:53AM

Water System Data Sheet Report

Texas Commission on Environmental Quality

Water System Data Sheet

WSDSR

PWS ID	PWS Name	Central Registry RN
1010312	CHEVRON PHILLIPS PASADENA PLASTICS COMPLEX	RN102018322

Organization/Customer *	Central Registry CN
PHILLIPS CHEMICAL COMPANY	CN601230907
CONOCOPHILLIPS PIPE LINE COMPANY	CN601674351
BP PIPELINES NORTH AMERICA INC	CN601243900

* Regulatory mail will be addressed to this organization / person

Responsible Official **		Title	
LYNN L COOK		GENERAL PARTNER	
License Type		License Number	
Mailing Address:			
Street Address		C/O or Address Line 2	
City		State	Zip
Business Phone		Other Phone	Other Phone Type
		Email	

** Regulatory mail will be addressed to this person

PWS Contact - If different than above ***		Title	
SIXTO ORTIZ			
License Type		License Number	
Mailing Address for PWS Primary Contact:			
Street Address		C/O or Address Line 2	
PO BOX 792			
City		State	Zip
PASADENA		TX	77506 - 0792
Business Phone		Other Phone	Other Phone Type
		Email	
		chapphn@cpchem.com	

*** Copies of most regulatory mail will be addressed to this person

No Emergency Contact assigned to this PWS
--

Owner Type	Owner Type Options: AFFECTED COUNTIES, COUNTY, DISTRICT/AUTHORITY, EXEMPT, FEDERAL GOVERNMENT, INVESTOR, MUNICIPALITY, NATIVE AMERICAN, PRIVATE, SUBMETER \ ALLOCATION, STATE GOVERNMENT, NOT RETAIL PUBLIC UTILITIES, WATER SUPPLY CORPORATION, MISC/UNKNOWN
PRIVATE	

System Type	System Type Options: SB 361, COMMUNITY, COMMUNITY (NON-GOVERNMENT OWNED), TRANSIENT/NON-COMMUNITY, NON-PUBLIC, NON-TRANSIENT/NON-COMMUNITY
NON-TRANSIENT/NON-COMMUNITY	

Customer Class	Customer Category	Population Served	# of Connect	# of Meters	# I/C w/other PWS
NONRESIDENT	NONRESIDENTIAL	426	1	0	1

Total Product (MGD)	Average Daily Consump.	Total Storage (MG)	Elev. Storage (MG)	Booster Pump Cap. (MGD)	Aux.Prod.Cap. Max.Pur.Cap.(MGD)	Pressure Tank Cap.(MG)
0.000	0.000	0.021	0.000	0.288	0.322	0.00440

Activity Status	Deactivation Date	Reason
ACTIVE		

Operator Grade	Number
WATER GRADE D	13

Last Survey Date	Surveyor	Survey Type	Code	Region	County	Def.Score
03/23/2007	HELEN MCCOY	SURVEY		12	HARRIS	0
02/24/2003	MELODY KIRKSEY	SURVEY		12	HARRIS	0
12/02/1998	ROSS ECHOLS	SURVEY	K11	12	HARRIS	0

(Entry Point)							
Entry Point	EP Name/Source Summation (Activity Status)	Plant Name (Activity Status)	WUD Plant Num	Chemical Mon Type	Chem Sample Point	Distribution Mon Type	Dist Sample Point
001	0.0044 MG PT / TRINITY RIVER(A)	INTERCONNECT()	17963		No		No

Train:	(Unnamed)
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(Treatments)				
Disinfection Zone	Treatment Sequence	Objective	Process	Treatment
	1	D	401	GASEOUS CHLORINATION(POST)

(Active Sources)							
Source Number	Source Name (Activity Status)	Operational Status	Source Type	Depth	Tested GPM	Rated GPM	
P1010312A	SW FROM PASADENA(A)	O	S	0	0	0	
Water Body		Segment Number			Surface Water Intake Type		
		()					
GPS Latitude (decimal)	GPS Longitude (decimal)	GPS Elevation	GPS Date	GPS Cert. No.	Seller		
0	0	0			1010293		

(Inactive/Offline Sources)	
(No inactive Sources associated with this EP/Plant)	

(Entry Point)							
Entry Point	EP Name/Source Summation (Activity Status)	Plant Name (Activity Status)	WUD Plant Num	Chemical Mon Type	Chem Sample Point	Distribution Mon Type	Dist Sample Point
001	0.0044 MG PT / TRINITY RIVER(A)	SWTP?IWTC?()	14839		No		No

Train:	A
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(Treatments)				
Disinfection Zone	Treatment Sequence	Objective	Process	Treatment
	1	D	403	GASEOUS CHLORINATION(PRE)
D01	STARTS AT 1			
D01	ENDS AT 1			
	2	P	240	COAGULATION
	3	P	600	RAPID MIX (OLD CODE)
	4	P	360	FLOCCULATION (OLD CODE)
	5	P	660	SEDIMENTATION
	6	P	345	FILTRATION(RAPID SAND)
	7	D	401	GASEOUS CHLORINATION(POST)
D02	STARTS AT 7			
D02	ENDS AT 7			
	8	C	740	PH ADJUSTMENT (OLD CODE)
	9	C	447	INHIBITOR (POLYPHOSPHATE)

(Active Sources)
(No active Sources associated with this EP/Plant)

(Inactive/Offline Sources)			
SourceNumber	Name	Status	Depth
S1010312A	1	A	0
S1010312B	2	A	0
G1010312A	5	A	2000
G1010312B	6	A	2000

Code Explanations
Monitoring Type Codes: (GW) GROUNDWATER , (GWP) GROUNDWATER - PURCHASED , (GUP) GROUNDWATER UNDER THE INFLUENCE - PURCHASED , (SWP) SURFACE WATER - PURCHASED , (GU) GROUNDWATER UNDER THE INFLUENCE OF SURFACE WATER , (N) NO SOURCES , (SW) SURFACE WATER
Activity Status Codes: (A) ACTIVE , (C) CCN CANCELLED , (D) DELETED/DISSOLVED , (G) SB 361 , (I) INACTIVE , (M) MERGED/ANNEXED , (N) NON-PUBLIC , (P) PROPOSED , (U) UNKNOWN , (W) UTILITY WATER SYS XFER
Operational Status Codes: (C) CAPPED , (D) DEMAND , (E) EMERGENCY , (F) FORMER PWS SOURCE , (I) INACTIVE PWS SYSTEM , (N) NON-DRINKING WATER , (O) OPERATING , (P) PLUGGED , (T) TEST , (Y) PWS

NOT ACTIVE AND NOT EXPECTED TO BE SO

Source Types: (G) GROUND WATER , (S) SURFACE WATER , (U) GROUND WATER UNDER THE INFLUENCE

- End of Report -

At the time of your query this data was the most current information available from our database, which is in real time. Every effort was made to retrieve it according to your query. Thank-you for using WUD.

4/7/2011

04/07/2011

11:21:53AM

Water System Data Sheet Report

Texas Commission on Environmental Quality

Water System Data Sheet

WSDSR

PWS ID	PWS Name	Central Registry RN
1010936	AGRIFOS FERTILIZER PASADENA	RN101621944

Organization/Customer *	Central Registry CN
MOBIL MINING AND MINERALS COMPANY	CN600127252
AGRIFOS FERTILIZER LLC	CN603449265
AGRIFOS FERTILIZER INC	CN602416588

* Regulatory mail will be addressed to this organization / person

Responsible Official **		Title	
R KEITH DARNELL		OPERATIONS MANAGER	
License Type		License Number	
Mailing Address:			
Street Address		C/O or Address Line 2	
PO BOX 3447			
City		State	Zip
PASADENA		TX	77501 - 3447
Business Phone		Other Phone	Other Phone Type
(713) 920-5300		(713) 920-5350(713) 920-5369	CELLULAR

** Regulatory mail will be addressed to this person

No PWS Primary Contact assigned to this PWS
--

No Emergency Contact assigned to this PWS
--

Owner Type	Owner Type Options: AFFECTED COUNTIES, COUNTY, DISTRICT/AUTHORITY, EXEMPT, FEDERAL GOVERNMENT, INVESTOR, MUNICIPALITY, NATIVE AMERICAN, PRIVATE, SUBMETER \ ALLOCATION, STATE GOVERNMENT, NOT RETAIL PUBLIC UTILITIES, WATER SUPPLY CORPORATION, MISC/UNKNOWN
PRIVATE	

System Type	System Type Options: SB 361, COMMUNITY, COMMUNITY (NON-GOVERNMENT OWNED), TRANSIENT/NON-COMMUNITY, NON-PUBLIC, NON-TRANSIENT/NON-COMMUNITY
NON-TRANSIENT/NON-COMMUNITY	

Customer Class	Customer Category	Population Served	# of Connect	# of Meters	# I/C w/other PWS

NONRESIDENT	NONRESIDENTIAL	198	18	0	0
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Total Product (MGD)	Average Daily Consump.	Total Storage (MG)	Elev. Storage (MG)	Booster Pump Cap. (MGD)	Aux.Prod.Cap. Max.Pur.Cap.(MGD)	Pressure Tank Cap.(MG)
1.008	0.000	0.050	0.000	0.432	0.000	0.00090

Activity Status	Deactivation Date	Reason
ACTIVE		

Operator Grade	Number
WATER GRADE D	2

Last Survey Date	Surveyor	Survey Type	Code	Region	County	Def.Score
03/23/2007	MELODY KIRKSEY	SURVEY		12	HARRIS	0
09/24/2003	LAN VU	SURVEY		12	HARRIS	2
10/17/2001	MELODY KIRKSEY	SURVEY		12	HARRIS	2

(Entry Point)							
Entry Point	EP Name/Source Summation (Activity Status)	Plant Name (Activity Status)	WUD Plant Num	Chemical Mon Type	Chem Sample Point	Distribution Mon Type	Dist Sample Point
001	PT / GULF COAST(A)	WELL NO 1508()	5962		No		No

Train:	(Unnamed)
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(Treatments)				
Disinfection Zone	Treatment Sequence	Objective	Process	Treatment
	1	D	423	HYPOCHLORINATION(PRE)

(Active Sources)						
Source Number	Source Name (Activity Status)	Operational Status	Source Type	Depth	Tested GPM	Rated GPM
G1010936A	5 - AKA WELL 4394 OR WELL 1508, NEAR CONTRACTOR PARKING(A)	O	G	1230	700	760
Drill Date		Well Data				
11/20/1961		EVANGELINE				
GPS Latitude (decimal)	GPS Longitude (decimal)	GPS Elevation	GPS Date	GPS Cert. No.	Seller	
29.741388	95.190277	15			Not a Purchased Source	

(Inactive/Offline Sources)			
SourceNumber	Name	Status	Depth
G1010936D	2191	P	1377
G1010936C	3 - AKA WELL 8017, E OF WWTP	N	1325
G1010936B	4351 - NR AUTOSHP	N	1112

Code Explanations
Monitoring Type Codes: (GW) GROUNDWATER , (GWP) GROUNDWATER - PURCHASED , (GUP) GROUNDWATER UNDER THE INFLUENCE - PURCHASED , (SWP) SURFACE WATER - PURCHASED , (GU) GROUNDWATER UNDER THE INFLUENCE OF SURFACE WATER , (N) NO SOURCES , (SW) SURFACE WATER
Activity Status Codes: (A) ACTIVE , (C) CCN CANCELLED , (D) DELETED/DISSOLVED , (G) SB 361 , (I) INACTIVE , (M) MERGED/ANNEXED , (N) NON-PUBLIC , (P) PROPOSED , (U) UNKNOWN , (W) UTILITY WATER SYS XFER
Operational Status Codes: (C) CAPPED , (D) DEMAND , (E) EMERGENCY , (F) FORMER PWS SOURCE , (I) INACTIVE PWS SYSTEM , (N) NON-DRINKING WATER , (O) OPERATING , (P) PLUGGED , (T) TEST , (Y) PWS NOT ACTIVE AND NOT EXPECTED TO BE SO
Source Types: (G) GROUND WATER , (S) SURFACE WATER , (U) GROUND WATER UNDER THE INFLUENCE

- End of Report -

At the time of your query this data was the most current information available from our database, which is in real time. Every effort was made to retrieve it according to your query. Thank-you for using WUD.

4/7/2011

04/07/2011

11:26:28AM

Water System Data Sheet Report

Texas Commission on Environmental Quality

Water System Data Sheet

WSDSR

PWS ID	PWS Name	Central Registry RN
1011172	ALBEMARLE HOUSTON PLANT	RN100218247

Organization/Customer *	Central Registry CN
ALBEMARLE CORPORATION	CN600129589

* Regulatory mail will be addressed to this organization / person

Responsible Official **		Title	
DOUGLAS K THOMPSON		ENVIRONMENTAL MANAGER	
License Type		License Number	
Mailing Address:			
Street Address		C/O or Address Line 2	
PO BOX 2500			
City	State	Zip	
PASADENA	TX	77501 - 2500	
Business Phone	Other Phone	Other Phone Type	Email
(713) 740-1710	(713) 740-9900(713) 740-1802	CELLULAR	

** Regulatory mail will be addressed to this person

No PWS Primary Contact assigned to this PWS**No Emergency Contact assigned to this PWS**

Owner Type	Owner Type Options: AFFECTED COUNTIES, COUNTY, DISTRICT/AUTHORITY, EXEMPT, FEDERAL GOVERNMENT, INVESTOR, MUNICIPALITY, NATIVE AMERICAN, PRIVATE, SUBMETER \ ALLOCATION, STATE GOVERNMENT, NOT RETAIL PUBLIC UTILITIES, WATER SUPPLY CORPORATION, MISC/UNKNOWN
PRIVATE	

System Type	System Type Options: SB 361, COMMUNITY, COMMUNITY (NON-GOVERNMENT OWNED), TRANSIENT/NON-COMMUNITY, NON-PUBLIC, NON-TRANSIENT/NON-COMMUNITY
NON-TRANSIENT/NON-COMMUNITY	

Customer Class	Customer Category	Population Served	# of Connect	# of Meters	# I/C w/other PWS
NONRESIDENT	NONRESIDENTIAL	775	6	0	0

4/7/2011

Water System Data Sheet Report

Total Product (MGD)	Average Daily Consump.	Total Storage (MG)	Elev. Storage (MG)	Booster Pump Cap. (MGD)	Aux.Prod.Cap. Max.Pur.Cap.(MGD)	Pressure Tank Cap.(MG)
0.396	0.000	0.009	0.000	1.728	0.000	0.00000

Activity Status	Deactivation Date	Reason
ACTIVE		

Operator Grade	Number
WATER GRADE A	1
WATER GRADE C GROUND	1

Last Survey Date	Surveyor	Survey Type	Code	Region	County	Def.Score
03/25/2008	AMY BRANOM	SURVEY		12	HARRIS	0
08/31/2004	LAN VU	SURVEY		12	HARRIS	7
04/15/2002	LAN VU	SURVEY		12	HARRIS	4

(Entry Point)							
Entry Point	EP Name/Source Summation (Activity Status)	Plant Name (Activity Status)	WUD Plant Num	Chemical Mon Type	Chem Sample Point	Distribution Mon Type	Dist Sample Point
001	0.0095MG GST / CHICOT(A)	CENTRAL PLANT AREA - 2500 N SOUTH ST()	6067		No		No

Train:	(Unnamed)
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(Treatments)				
Disinfection Zone	Treatment Sequence	Objective	Process	Treatment
	1	C	447	INHIBITOR (POLYPHOSPHATE)
	2	D	403	GASEOUS CHLORINATION(PRE)

(Active Sources)						
Source Number	Source Name (Activity Status)	Operational Status	Source Type	Depth	Tested GPM	Rated GPM
G1011172A	3A - CENTRAL AREA OF PLANT(A)	O	G	476	275	1300
Drill Date		Well Data				
5/22/1951		CHICOT AQUIFER				
GPS Latitude (decimal)	GPS Longitude (decimal)	GPS Elevation	GPS Date	GPS Cert. No.	Seller	
29.740278	95.168891	20			Not a Purchased Source	

(Inactive/Offline Sources)			
SourceNumber	Name	Status	Depth
G1011172B	2L - NE AREA OF PLANT	E	1740
G1011172D	4L - NE AREA OF PLANT	E	1252
G1011172C	5A - N AREA OF PLANT	F	453

Code Explanations	
Monitoring Type Codes: (GW) GROUNDWATER , (GWP) GROUNDWATER - PURCHASED , (GUP) GROUNDWATER UNDER THE INFLUENCE - PURCHASED , (SWP) SURFACE WATER - PURCHASED , (GU) GROUNDWATER UNDER THE INFLUENCE OF SURFACE WATER , (N) NO SOURCES , (SW) SURFACE WATER	
Activity Status Codes: (A) ACTIVE , (C) CCN CANCELLED , (D) DELETED/DISSOLVED , (G) SB 361 , (I) INACTIVE , (M) MERGED/ANNEXED , (N) NON-PUBLIC , (P) PROPOSED , (U) UNKNOWN , (W) UTILITY WATER SYS XFER	
Operational Status Codes: (C) CAPPED , (D) DEMAND , (E) EMERGENCY , (F) FORMER PWS SOURCE , (I) INACTIVE PWS SYSTEM , (N) NON-DRINKING WATER , (O) OPERATING , (P) PLUGGED , (T) TEST , (Y) PWS NOT ACTIVE AND NOT EXPECTED TO BE SO	
Source Types: (G) GROUND WATER , (S) SURFACE WATER , (U) GROUND WATER UNDER THE INFLUENCE	

- End of Report -

At the time of your query this data was the most current information available from our database, which is in real time. Every effort was made to retrieve it according to your query. Thank-you for using WUD.

4/7/2011

04/07/2011

11:12:22AM

Water System Data Sheet Report

Texas Commission on Environmental Quality

Water System Data Sheet

WSDSR

PWS ID	PWS Name	Central Registry RN
1011570	HOUSTON REFINING	RN100218130

Organization/Customer *	Central Registry CN
A J HURT JR INCORPORATED	CN600249585
ARCO PIPE LINE CO	CN600381867
LYONDELL-CITGO REFINING COMPANY LTD	CN602600140

* Regulatory mail will be addressed to this organization / person

Responsible Official **		Title	
MARIE HAUER		REGISTERED AGENT	
License Type		License Number	
Mailing Address:			
Street Address		C/O or Address Line 2	
PO BOX 2451		C/O JAMES B ROECHER GENERAL MANAGER	
City	State	Zip	
HOUSTON	TX	77252 - 2451	
Business Phone	Other Phone	Other Phone Type	Email
(713) 321-4111	(713) 321-6820(713) 321-4489(713) 321-4839	E-MAIL	

** Regulatory mail will be addressed to this person

PWS Contact - If different than above ***		Title	
BRUCE SUMMERS		UTILITIES AREA SUPER	
License Type		License Number	
Mailing Address for PWS Primary Contact:			
Street Address		C/O or Address Line 2	
12000 LAWDALE ST			
City	State	Zip	
HOUSTON	TX	77017 - 2740	
Business Phone	Other Phone	Other Phone Type	Email
(713) 321-5685			

*** Copies of most regulatory mail will be addressed to this person

No Emergency Contact assigned to this PWS

Owner Type	Owner Type Options: AFFECTED COUNTIES, COUNTY, DISTRICT/AUTHORITY, EXEMPT, FEDERAL GOVERNMENT, INVESTOR, MUNICIPALITY, NATIVE AMERICAN, PRIVATE, SUBMETER \ ALLOCATION, STATE GOVERNMENT, NOT RETAIL PUBLIC UTILITIES, WATER SUPPLY CORPORATION, MISC/UNKNOWN
PRIVATE	

System Type	System Type Options: SB 361, COMMUNITY, COMMUNITY (NON-GOVERNMENT OWNED), TRANSIENT/NON-COMMUNITY, NON-PUBLIC, NON-TRANSIENT/NON-COMMUNITY
NON-TRANSIENT/NON-COMMUNITY	

Customer Class	Customer Category	Population Served	# of Connect	# of Meters	# I/C w/other PWS
NONRESIDENT	NONRESIDENTIAL	1,000	65	0	0

Total Product (MGD)	Average Daily Consump.	Total Storage (MG)	Elev. Storage (MG)	Booster Pump Cap. (MGD)	Aux.Prod.Cap. Max.Pur.Cap.(MGD)	Pressure Tank Cap.(MG)
2.045	0.054	0.060	0.000	1.296	0.000	0.00000

Activity Status	Deactivation Date	Reason
ACTIVE		

Operator Grade	Number
WATER GRADE B GROUND	1
WATER GRADE D	1

Last Survey Date	Surveyor	Survey Type	Code	Region	County	Def.Score
01/17/2008	BARRY PRICE	SURVEY		12	HARRIS	0
04/07/2005	MIKE DAVIS	SURVEY		12	HARRIS	0
09/27/2002	LAN VU	SURVEY		12	HARRIS	2

(Entry Point)							
Entry Point	EP Name/Source Summation (Activity Status)	Plant Name (Activity Status)	WUD Plant Num	Chemical Mon Type	Chem Sample Point	Distribution Mon Type	Dist Sample Point
001	EP 000000000000001(I)	CHLORINATOR()	15991		No		No

Train:	(Unnamed)
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(Treatments)				
Disinfection Zone	Treatment Sequence	Objective	Process	Treatment
	1	D	403	GASEOUS CHLORINATION(PRE)

(Active Sources)
(No active Sources associated with this EP/Plant)

(Inactive/Offline Sources)			
SourceNumber	Name	Status	Depth
G1011570A	8	P	1701
G1011570B	9 - W TANK FARM	E	1192

(Entry Point)							
Entry Point	EP Name/Source Summation (Activity Status)	Plant Name (Activity Status)	WUD Plant Num	Chemical Mon Type	Chem Sample Point	Distribution Mon Type	Dist Sample Point
002	EP 000000000000002(I)	CHLORINATOR()	15992		No		No

Train:	(Unnamed)
--------	------------------

(Treatments)				
Disinfection Zone	Treatment Sequence	Objective	Process	Treatment
	1	D	403	GASEOUS CHLORINATION(PRE)

(Active Sources)
(No active Sources associated with this EP/Plant)

(Inactive/Offline Sources)			
SourceNumber	Name	Status	Depth
G1011570C	10 - NEAR MAIN OFFICE	E	1226

(Entry Point)							
Entry Point	EP Name/Source Summation (Activity Status)	Plant Name (Activity Status)	WUD Plant Num	Chemical Mon Type	Chem Sample Point	Distribution Mon Type	Dist Sample Point
003	SAMPLE TAP / GULF COAST(A)	12000 LAWNDAL ST()	6238		No		No

Train:	(Unnamed)
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(Treatments)				
Disinfection Zone	Treatment Sequence	Objective	Process	Treatment
	1	D	423	HYPOCHLORINATION(PRE)

(Active Sources)						
Source Number	Source Name (Activity Status)	Operational Status	Source Type	Depth	Tested GPM	Rated GPM
G1011570D	11 - N OF 735(A)	O	G	1844	200	220
Drill Date		Well Data				
7/7/1947		EVANGELINE AQUIFER				
GPS Latitude (decimal)	GPS Longitude (decimal)	GPS Elevation	GPS Date	GPS Cert. No.	Seller	
29.713054	95.231941	25			Not a Purchased Source	

(Inactive/Offline Sources)
(No inactive Sources associated with this EP/Plant)

Code Explanations
Monitoring Type Codes: (GW) GROUNDWATER , (GWP) GROUNDWATER - PURCHASED , (GUP) GROUNDWATER UNDER THE INFLUENCE - PURCHASED , (SWP) SURFACE WATER - PURCHASED , (GU) GROUNDWATER UNDER THE INFLUENCE OF SURFACE WATER , (N) NO SOURCES , (SW) SURFACE WATER
Activity Status Codes: (A) ACTIVE , (C) CCN CANCELLED , (D) DELETED/DISSOLVED , (G) SB 361 , (I) INACTIVE , (M) MERGED/ANNEXED , (N) NON-PUBLIC , (P) PROPOSED , (U) UNKNOWN , (W) UTILITY WATER SYS XFER
Operational Status Codes: (C) CAPPED , (D) DEMAND , (E) EMERGENCY , (F) FORMER PWS SOURCE , (I) INACTIVE PWS SYSTEM , (N) NON-DRINKING WATER , (O) OPERATING , (P) PLUGGED , (T) TEST , (Y) PWS NOT ACTIVE AND NOT EXPECTED TO BE SO
Source Types: (G) GROUND WATER , (S) SURFACE WATER , (U) GROUND WATER UNDER THE INFLUENCE

- End of Report -

At the time of your query this data was the most current information available from our database, which is in real time. Every effort was made to retrieve it according to your query. Thank-you for using WUD.

4/7/2011

04/07/2011

11:28:06AM

Water System Data Sheet Report

Texas Commission on Environmental Quality

Water System Data Sheet

WSDSR

PWS ID	PWS Name	Central Registry RN
1011573	GEORGIA GULF CHEMICALS & VINYL PASADENA PLANT	RN101230753

Organization/Customer *	Central Registry CN
GEORGIA GULF CHEMICALS & VINYL LLC	CN600753966

* Regulatory mail will be addressed to this organization / person

Responsible Official **		Title	
EDWARD SCHMITT		PRESIDENT	
License Type		License Number	
Mailing Address:			
Street Address		C/O or Address Line 2	
PO BOX 1959		C/O STEVE CHRISTIANSEN PLANT MANAGER	
City	State	Zip	
PASADENA	TX	77501 - 1959	
Business Phone	Other Phone	Other Phone Type	Email
(713) 920-4330			

** Regulatory mail will be addressed to this person

PWS Contact - If different than above ***		Title	
SHAWN LYLES		OPERATOR	
License Type		License Number	
Mailing Address for PWS Primary Contact:			
Street Address		C/O or Address Line 2	
City	State	Zip	
Business Phone	Other Phone	Other Phone Type	Email
(713) 920-4330			

*** Copies of most regulatory mail will be addressed to this person

No Emergency Contact assigned to this PWS
--

Owner Type	Owner Type Options: AFFECTED COUNTIES, COUNTY, DISTRICT/AUTHORITY, EXEMPT, FEDERAL GOVERNMENT, INVESTOR, MUNICIPALITY, NATIVE AMERICAN, PRIVATE, SUBMETER \ ALLOCATION, STATE GOVERNMENT, NOT RETAIL PUBLIC UTILITIES, WATER SUPPLY CORPORATION, MISC/UNKNOWN
PRIVATE	

System Type	System Type Options: SB 361, COMMUNITY, COMMUNITY (NON-GOVERNMENT OWNED), TRANSIENT/NON-COMMUNITY, NON-PUBLIC, NON-TRANSIENT/NON-COMMUNITY
NON-TRANSIENT/NON-COMMUNITY	

Customer Class	Customer Category	Population Served	# of Connect	# of Meters	# I/C w/other PWS
NONRESIDENT	NONRESIDENTIAL	65	5	0	0

Total Product (MGD)	Average Daily Consump.	Total Storage (MG)	Elev. Storage (MG)	Booster Pump Cap. (MGD)	Aux.Prod.Cap. Max.Pur.Cap.(MGD)	Pressure Tank Cap.(MG)
0.071	0.000	0.002	0.000	0.202	0.000	0.00080

Activity Status	Deactivation Date	Reason
ACTIVE		

Operator Grade	Number
WATER GRADE D	6

Last Survey Date	Surveyor	Survey Type	Code	Region	County	Def.Score
01/15/2008	BARRY PRICE	SURVEY		12	HARRIS	0
08/25/2004	LAN VU	SURVEY		12	HARRIS	2
04/15/2002	LAN VU	SURVEY		12	HARRIS	0

(Entry Point)							
Entry Point	EP Name/Source Summation (Activity Status)	Plant Name (Activity Status)	WUD Plant Num	Chemical Mon Type	Chem Sample Point	Distribution Mon Type	Dist Sample Point
001	0.0008 MG PT / CHICOT(A)	3503 HWY 225()	6239		No		No

Train:	(Unnamed)
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(Treatments)				
Disinfection Zone	Treatment Sequence	Objective	Process	Treatment
	1	D	423	HYPOCHLORINATION(PRE)

(Active Sources)						
Source Number	Source Name (Activity Status)	Operational Status	Source Type	Depth	Tested GPM	Rated GPM
G1011573B	2 - 3503 HWY 225(A)	O	G	490	49	57
Drill Date		Well Data				
7/27/1996		CHICOT AQUIFER, LOWER				
GPS Latitude (decimal)	GPS Longitude (decimal)	GPS Elevation	GPS Date	GPS Cert. No.	Seller	
29.72611	95.15583	0			Not a Purchased Source	

(Inactive/Offline Sources)			
SourceNumber	Name	Status	Depth
G1011573A	1 - CENTER OF PLANT	P	500

Code Explanations
Monitoring Type Codes: (GW) GROUNDWATER , (GWP) GROUNDWATER - PURCHASED , (GUP) GROUNDWATER UNDER THE INFLUENCE - PURCHASED , (SWP) SURFACE WATER - PURCHASED , (GU) GROUNDWATER UNDER THE INFLUENCE OF SURFACE WATER , (N) NO SOURCES , (SW) SURFACE WATER
Activity Status Codes: (A) ACTIVE , (C) CCN CANCELLED , (D) DELETED/DISSOLVED , (G) SB 361 , (I) INACTIVE , (M) MERGED/ANNEXED , (N) NON-PUBLIC , (P) PROPOSED , (U) UNKNOWN , (W) UTILITY WATER SYS XFER
Operational Status Codes: (C) CAPPED , (D) DEMAND , (E) EMERGENCY , (F) FORMER PWS SOURCE , (I) INACTIVE PWS SYSTEM , (N) NON-DRINKING WATER , (O) OPERATING , (P) PLUGGED , (T) TEST , (Y) PWS NOT ACTIVE AND NOT EXPECTED TO BE SO
Source Types: (G) GROUND WATER , (S) SURFACE WATER , (U) GROUND WATER UNDER THE INFLUENCE

- End of Report -

At the time of your query this data was the most current information available from our database, which is in real time. Every effort was made to retrieve it according to your query. Thank-you for using WUD.

4/7/2011

04/07/2011

11:23:10AM

Water System Data Sheet Report

Texas Commission on Environmental Quality

Water System Data Sheet

WSDSR

PWS ID	PWS Name	Central Registry RN
1013224	GALENA PARK ISD	RN104213012

Organization/Customer *	Central Registry CN
GALENA PARK ISD	CN600405260

* Regulatory mail will be addressed to this organization / person

Responsible Official **		Title	
MARK HENRY		SUPERINTENDENT	
License Type		License Number	
Mailing Address:			
Street Address		C/O or Address Line 2	
14705 WOODFOREST BLVD			
City	State	Zip	
HOUSTON	TX	77015 - 3259	
Business Phone	Other Phone	Other Phone Type	Email
(832) 386-1000			

** Regulatory mail will be addressed to this person

PWS Contact - If different than above ***		Title	
BURTON FOWLER		MAINTENANCE	
License Type		License Number	
Mailing Address for PWS Primary Contact:			
Street Address		C/O or Address Line 2	
1101 HOLLAND AVE			
City	State	Zip	
GALENA PARK	TX	77547 - 3111	
Business Phone	Other Phone	Other Phone Type	Email
(832) 435-9439			

*** Copies of most regulatory mail will be addressed to this person

No Emergency Contact assigned to this PWS
--

Owner Type	Owner Type Options: AFFECTED COUNTIES, COUNTY, DISTRICT/AUTHORITY, EXEMPT, FEDERAL GOVERNMENT, INVESTOR, MUNICIPALITY, NATIVE AMERICAN, PRIVATE, SUBMETER \ ALLOCATION, STATE GOVERNMENT, NOT RETAIL PUBLIC UTILITIES, WATER SUPPLY CORPORATION, MISC/UNKNOWN
DISTRICT/AUTHORITY	

System Type	System Type Options: SB 361, COMMUNITY, COMMUNITY (NON-GOVERNMENT OWNED), TRANSIENT/NON-COMMUNITY, NON-PUBLIC, NON-TRANSIENT/NON-COMMUNITY
NON-TRANSIENT/NON-COMMUNITY	

Customer Class	Customer Category	Population Served	# of Connect	# of Meters	# I/C w/other PWS
NONRESIDENT	NONRESIDENTIAL	60	3	0	0

Total Product (MGD)	Average Daily Consump.	Total Storage (MG)	Elev. Storage (MG)	Booster Pump Cap. (MGD)	Aux.Prod.Cap. Max.Pur.Cap.(MGD)	Pressure Tank Cap.(MG)
0.072	0.000	0.000	0.000	0.000	0.000	0.00052

Activity Status	Deactivation Date	Reason
ACTIVE		CHANGE

Operator Grade	Number
WATER GRADE D	2

Last Survey Date	Surveyor	Survey Type	Code	Region	County	Def.Score
11/14/2007	HUYEN LUU	SURVEY		12	HARRIS	0
04/30/2004	MELODY KIRKSEY	SURVEY		12	HARRIS	0

(Entry Point)							
Entry Point	EP Name/Source Summation (Activity Status)	Plant Name (Activity Status)	WUD Plant Num	Chemical Mon Type	Chem Sample Point	Distribution Mon Type	Dist Sample Point
001	PT / GULF COAST(A)	2000 HOLLAND AVE()	20280		No		No

Train:	(Unnamed)
--------	-----------

(Treatments)				
Disinfection Zone	Treatment Sequence	Objective	Process	Treatment
	1	D	423	HYPOCHLORINATION(PRE)

(Active Sources)							
Source Number	Source Name (Activity Status)	Operational Status	Source Type	Depth	Tested GPM	Rated GPM	
G1013224A	1 - 2000 HOLLAND AVE(A)	O	G	325	50	200	
Drill Date		Well Data					
3/14/2004							
GPS Latitude (decimal)	GPS Longitude (decimal)	GPS Elevation	GPS Date	GPS Cert. No.	Seller		
0	0	0			Not a Purchased Source		

(Inactive/Offline Sources)
(No inactive Sources associated with this EP/Plant)

Code Explanations
Monitoring Type Codes: (GW) GROUNDWATER , (GWP) GROUNDWATER - PURCHASED , (GUP) GROUNDWATER UNDER THE INFLUENCE - PURCHASED , (SWP) SURFACE WATER - PURCHASED , (GU) GROUNDWATER UNDER THE INFLUENCE OF SURFACE WATER , (N) NO SOURCES , (SW) SURFACE WATER
Activity Status Codes: (A) ACTIVE , (C) CCN CANCELLED , (D) DELETED/DISSOLVED , (G) SB 361 , (I) INACTIVE , (M) MERGED/ANNEXED , (N) NON-PUBLIC , (P) PROPOSED , (U) UNKNOWN , (W) UTILITY WATER SYS XFER
Operational Status Codes: (C) CAPPED , (D) DEMAND , (E) EMERGENCY , (F) FORMER PWS SOURCE , (I) INACTIVE PWS SYSTEM , (N) NON-DRINKING WATER , (O) OPERATING , (P) PLUGGED , (T) TEST , (Y) PWS NOT ACTIVE AND NOT EXPECTED TO BE SO
Source Types: (G) GROUND WATER , (S) SURFACE WATER , (U) GROUND WATER UNDER THE INFLUENCE

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Report 289

*DIGITAL MODELS FOR SIMULATION
OF GROUND-WATER HYDROLOGY
OF THE CHICOT AND EVANGELINE
AQUIFERS ALONG THE GULF
COAST OF TEXAS*



TEXAS DEPARTMENT OF WATER RESOURCES

May 1985



TEXAS DEPARTMENT OF WATER RESOURCES

REPORT 289

**DIGITAL MODELS FOR SIMULATION OF GROUND-WATER
HYDROLOGY OF THE CHICOT AND EVANGELINE
AQUIFERS ALONG THE GULF COAST OF TEXAS**

By

Jerry E. Carr, Walter R. Meyer,
William M. Sandeen, and Ivy R. McLane
U.S. Geological Survey

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Texas Department of Water Resources

May 1985

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ABSTRACT

This report documents the construction and calibration of four digital models for the simulation of hydrologic conditions in the Chicot and Evangeline aquifers along the Gulf Coast of Texas. The models are five-layer, finite-difference models for simulation of three-dimensional, ground-water flow.

The hydrologic properties modeled were ground-water withdrawals, aquifer transmissivity, storage coefficients of the aquifers and clay beds, effective vertical hydraulic conductivity, vertical leakage, and declines in the altitudes of the potentiometric surfaces. The models, which simulate potentiometric-surface declines, changes in storage in the clay beds, and land-surface subsidence, were calibrated by use of historic records from 1890 or 1900 to 1970, and 1890 or 1900 to 1975. The models are very sensitive to variations in aquifer transmissivity and to variations in storage in water-table aquifers; they are less sensitive to variations in storage in artesian aquifers and to variations in storage in clay beds.

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DIGITAL MODELS FOR SIMULATION OF GROUND-WATER HYDROLOGY OF THE CHICOT AND EVANGELINE AQUIFERS ALONG THE GULF COAST OF TEXAS

By

Jerry E. Carr, Walter R. Meyer,
William M. Sandeen, and Ivy R. McLane
U.S. Geological Survey

INTRODUCTION

Purpose and Scope of This Report

The freshwater aquifers along the Texas Gulf Coast (Figure 1) supply large quantities of water for municipal supply, industrial use, and irrigation. However, extensive development of these aquifers has resulted in large declines of water levels in wells, land-surface subsidence, and saltwater encroachment. The purpose of this study, conducted by the U.S. Geological Survey in cooperation with the Texas Department of Water Resources, was to develop a means for predicting declines in the altitudes of the potentiometric surfaces in the Chicot and Evangeline aquifers for various conditions of pumping. Because of the complexity of the hydrologic system, digital-computer models were used to simulate the declines that would result from given pumping

stresses. This report discusses the hydrologic data needed to construct and calibrate the models. It also presents maps showing the observed and simulated declines in the altitudes of the potentiometric surfaces and the observed and simulated subsidence of the land surface.

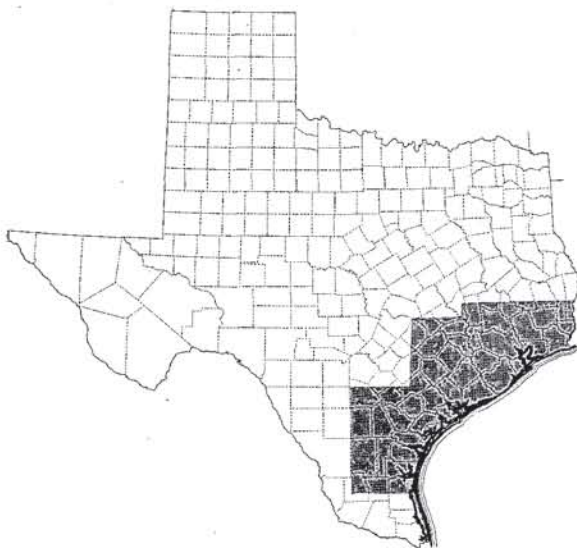


Figure 1.—Location and Extent of the Study Area

The Texas Department of Water Resources makes copies of the model and documentation available through the Texas Natural Resources Information System. Please contact the Texas Natural Resources Information System, P.O. Box 13087, Austin, Texas 78711, telephone 1-(512)-475-3321.

The study area was divided into four subregions—eastern, Houston, central, and

southern. A digital-computer model was constructed and calibrated for each subregion. The coastal area was arbitrarily divided into a northern and southern region for presentation of the maps within the report. These maps show the approximate altitude of the base of the Chicot and Evangeline aquifers, the estimated transmissivities and storage coefficients of the aquifers, and the thickness of the clay beds. The modeling procedure consisted of selecting an existing computer program and modifying it to conceptually represent the hydrologic system. For each of the subregions, a generalized model (minimodel) was constructed and calibrated before constructing and calibrating a detailed model (maximodel).

For the purposes of this report, only a brief discussion of the hydrogeology is presented. For additional information on the hydrogeology of the coastal area and on the hydrologic problems related to the withdrawals of ground water, the reader is referred to the reports listed in the section "Selected References."

History of Hydrologic Modeling Along the Texas Gulf Coast

Previous hydrologic modeling along the Texas Gulf Coast was conducted for the Houston area, where the greatest amount of ground-water pumping and corresponding water-level declines have occurred. The first hydrologic model (Wood and Gabrysch, 1965) was an electric-analog model that included about 5,000 square miles (12,950 km²) in Harris, Galveston, Brazoria, Fort Bend, Austin, Waller, Montgomery, Liberty, and Chambers Counties. This model, which was constructed on the basis of data collected since 1931, was used primarily to predict water-level declines under various conditions of pumping. This first attempt to model the ground-water system was reasonably successful, but the usefulness of the model was limited because the simulations required that the aquifers be operated independently and the results of pumping in the western part of the area could not be simulated.

The second model (Jorgensen, 1975) was an electric-analog model that incorporated additional hydrologic data and reflected more advanced concepts of the hydrologic system. These concepts included consideration of the vertical movement of water between the aquifers and the allowance for water to be derived from the clay beds. This model expanded the area of the first model to about 9,100 square miles (23,570 km²) to minimize the boundary effects caused by long-term pumping. Jorgensen (1975) noted that additional hydrologic data and modification of the model would be needed for studies of such problems as saltwater encroachment and land-surface subsidence.

The third model (Meyer and Carr, 1979) was a digital-computer model, representing an area of 27,000 square miles (69,930 km²), that provided an easier means of varying hydrologic properties during the calibration process. This model also was used primarily to predict water-level declines under various conditions of pumping. In general, each of the models was designed to simulate the effects of steady withdrawals of water from well fields for 1 year or longer.

Metric Conversions

Metric equivalents of "inch-pound" units of measurement are given in parentheses in the text. The "inch-pound" units may be converted to metric units by the following conversion factors:

<u>From</u>	<u>Multiply by</u>	<u>To obtain</u>
foot	0.3048	meter (m)
foot ⁻¹	3.2802	meter ⁻¹ (m ⁻¹)
foot per day (ft/d)	0.3048	meter per day (m/d)
foot squared per day (ft ² /d)	0.0929	meter squared per day (m ² /d)
inch per year (in/yr)	2.54	centimeter per year (cm/yr)
mile	1.609	kilometer (km)
million gallons per day	0.04381	cubic meter per second
square mile	2.590	square kilometer (km ²)

National Geodetic Vertical Datum of 1929 (NGVD of 1929): A geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada, formerly called "mean sea level."

HYDROGEOLOGY OF THE TEXAS GULF COAST

The hydrogeologic units are the Chicot aquifer, Evangeline aquifer, and the Burkeville confining layer (Figures 2 and 3). These units are composed of sedimentary deposits of gravel, sand, silt, and clay. The geologic formations, from oldest to youngest, are: the Fleming Formation and Oakville Sandstone of Miocene age; the Goliad Sand of Pliocene age; the Willis Sand, Bentley Formation, Montgomery Formation, and Beaumont Clay of Pleistocene age; and alluvium of Quaternary age. The relationship between the hydrogeologic units and the geologic formations (stratigraphic units) is given in Table 1. With exception of the alluvium and the Goliad Sand, the formations crop out in belts that are nearly parallel to the shoreline of the Gulf of Mexico. The Goliad Sand is overlapped by younger formations east of the Brazos River and is not exposed at the surface in the coastal area. The younger formations crop out nearer the Gulf and the older ones farther inland. All formations thicken downdip towards the Gulf of Mexico so that the older formations dip more steeply than the younger ones. Locally, the occurrence of salt domes, faults, and folds may cause reversals of the regional dip and thickening or thinning of the formations.

Table 1.--Geologic and Hydrologic Units Used in This Report and in Recent Reports on Nearby Areas

Geologic classification			Hydrologic units									
System	Series	Stratigraphic unit	Houston district (Lang, Winslow, and White, 1950)		Houston district (Wood and Gabrysch, 1965)	Texas-Louisiana (Turcan, Wesselman, and Kilburn, 1966)	Houston district (Jorgensen, 1975)		This report			
Q u a t e r n a r y	Holocene	Quaternary alluvium	Alluvial deposits		Confining layer and Alta Loma Sand of Rose (1943)	C h i c o t a q u i f e r	C h i c o t a q u i f e r	Upper unit	C h i c o t	Upper unit		
			Beaumont Clay	B e a u m o n t							C l a y	a q u i f e r
		Montgomery Formation										
		Bentley Formation	Zone 7	Heavily pumped layer				E v a n g e l i n e a q u i f e r	E v a n g e l i n e a q u i f e r	Lower unit	a q u i f e r	Lower unit
		Willis Sand	Zone 6									
		T e r t i a r y	Pliocene	Goliad Sand				Zone 5	Heavily pumped layer	E v a n g e l i n e a q u i f e r	E v a n g e l i n e a q u i f e r	E v a n g e l i n e a q u i f e r
Zone 4	Burkeville confining layer				Burkeville confining layer	Burkeville confining layer						
Zone 3												
Miocene	Fleming Formation		Zone 2	Zone 2	Jasper aquifer	Jasper aquifer	Jasper aquifer					
			Zone 1									
			Oakville Sandstone									

Chicot Aquifer

The Chicot aquifer is composed of the Willis Sand, Bentley Formation, Montgomery Formation, Beaumont Clay, and Quaternary alluvium. The Chicot includes all deposits from the land surface to the top of the Evangeline aquifer. The altitude of the base of the Chicot aquifer is shown in Figures 4 and 5.

In much of the coastal area, the Chicot aquifer consists of discontinuous layers of sand and clay of about equal total thickness. However, in some parts of the coastal area (mainly within the Houston area), the aquifer can be separated into an upper and lower unit (Jorgensen, 1975). The upper unit can be defined where the altitude of its potentiometric surface differs from the altitude of the potentiometric surface in the lower unit. If the upper unit of the Chicot aquifer cannot be defined, the aquifer is said to be undifferentiated. The aquifer is under water-table conditions in its updip part, becoming confined in the downdip direction. Throughout most of Galveston County and southeast Harris County, the basal part of the Chicot aquifer is formed by a massive sand section that has a relatively high hydraulic conductivity. This sand unit, which is heavily pumped in some places, is known locally as the Alta Loma Sand (Alta Loma Sand of Rose, 1943).

Evangeline Aquifer

The Evangeline aquifer, which consists mostly of discontinuous layers of sand and clay of about equal total thickness, is composed of the Goliad Sand and the uppermost part of the Fleming Formation. The altitude of the base of the Evangeline aquifer is shown in Figures 6 and 7. Because the Chicot and Evangeline aquifers are geologically similar, the basis for separating them is primarily a difference in hydraulic conductivity, which in part causes the difference in the altitudes of the potentiometric surfaces in the two aquifers. The aquifer is under water-table conditions in its updip part, becoming confined in the downdip direction.

Burkeville Confining Layer

The Burkeville confining layer, which is composed of the upper part of the Fleming Formation, consists mainly of clay but contains some layers of sand. The Burkeville, which underlies the Evangeline aquifer, restricts the flow of water except in areas where it is pierced by salt domes and in areas where it contains a high percentage of sand.

DESCRIPTION OF THE DIGITAL MODELS

The conceptual model (Figure 8) for the four modeled subregions (Figure 9) consists of five layers. In ascending order, layer 1 is equivalent to the total thickness of the sand beds in the Evangeline aquifer; layer 2 is equivalent to the clay thickness between the centerline of the Chicot aquifer and the centerline of the Evangeline aquifer; layer 3 is equivalent to the Alta Loma Sand of Rose (1943) where present, otherwise it is equivalent to the total thickness of the sand beds in the Chicot aquifer; layer 4 is equivalent to the clay thickness between the land surface and the centerline of the Chicot aquifer; and layer 5 is used as an upper boundary to simulate recharge to

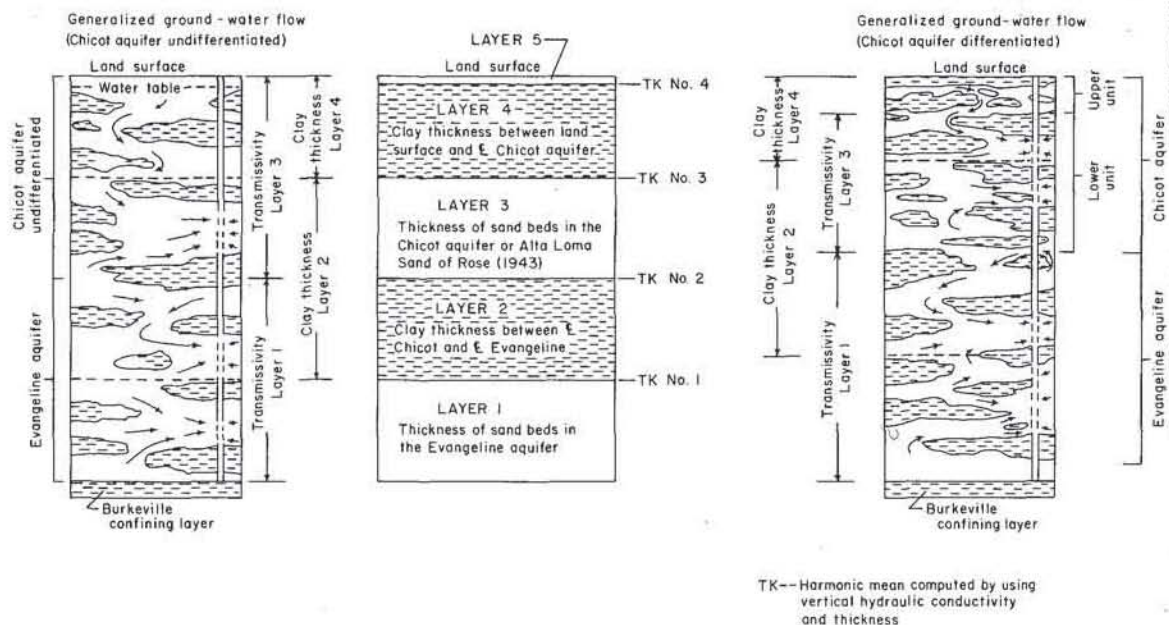


Figure 8.—Conceptual Model of the Ground-Water Hydrology of the Texas Gulf Coast

the system from vertical leakage. Within the model, clay thickness intervals are divided at aquifer centerlines to support the concept that the upper clays (layer 4) mostly control the vertical flow to the Chicot sands (layer 3), and that the clays (layer 2) from the centerline of the Chicot aquifer to the centerline of the Evangeline aquifer mostly control the vertical flow between the two aquifers.

The Burkeville confining layer (base of model) is assumed for modeling purposes to form a barrier that allows only a negligible flow of water. Salt domes, which occur throughout the study area, were not considered in the construction of the models because they have only a localized effect on ground-water conditions. In most areas, the domes do not pierce the Chicot or Evangeline aquifers.

Selection of horizontal boundaries for the models was somewhat arbitrary because the Chicot and Evangeline aquifers form an extensive and continuous hydrologic system along the Texas Gulf Coast. The no-flow boundaries selected were primarily determined by the areal extent required to minimize the effects of pumping along the boundaries and to eliminate the necessity of having flux boundaries.

The digital models used in this study are finite-difference models as modified from Trescott (1975) for simulation of three-dimensional ground-water flow; the models converge to a solution rapidly because all equations are solved simultaneously rather than sequentially as in the quasi three-dimensional model of Bredehoeft and Pinder (1970). The iterative numerical technique used to solve the set of simultaneous finite-difference equations is the strongly implicit procedure originally described by Stone (1968) for problems in two dimensions. Wienstein, Stone, and Kwan (1969) later extended the technique to three dimensions.

The model developed by Trescott (1975) was modified by J. E. Carr (Meyer and Carr, 1979) to include methods to increase or decrease the values of storage in the clay layers, at a head that is equivalent to preconsolidation stress, to simulate land-surface subsidence. This reference head is arbitrarily referred to as "critical head." Different storage coefficients, which are head depen-

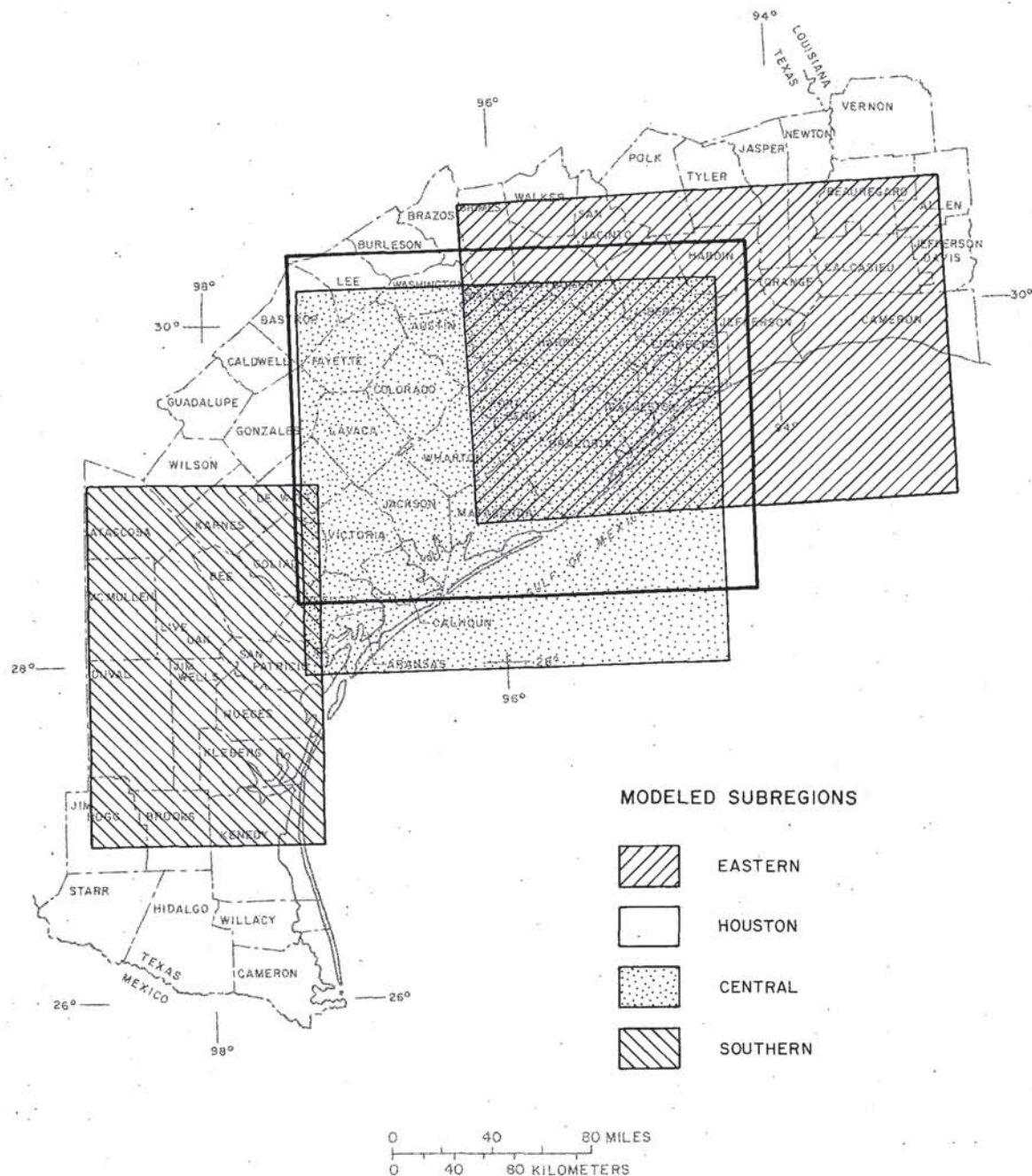


Figure 9.—Index Map of Modeled Subregions

dent, are used for elastic and inelastic compression. In addition, the modifications include accumulators for the quantities of water derived from clays in layers 2 and 4.

HYDROLOGIC PROPERTIES MODELED

Ground-Water Withdrawals

Ground-water withdrawals (Figures 10-11) were grouped into four pumping periods for report presentation. For model simulation, the Houston subregion consisted of seven pumping

periods. The distribution of withdrawals by aquifer was based on the proportion of well screens in each aquifer. Withdrawals from the upper unit of the Chicot aquifer were not modeled because withdrawals are minor in most areas.

Transmissivities

Estimates of transmissivity were originally determined from aquifer-test data by using either the Theis (1935) equation or the modified Hantush (1960) equation as outlined by Lohman (1972, p. 15-19, p. 32-34). Distribution of the estimated transmissivity was then made by multiplying the sand thickness of the aquifer at a given location by the average hydraulic conductivity as determined from the estimates of transmissivity for a given area. It should be noted that because of violations of the assumptions used by the analytical equations, the transmissivities as determined from aquifer-test data are only approximations. Therefore, the transmissivities were used to define a reasonable range of values to be tested in the models.

The areal distributions of the transmissivities of the Chicot and Evangeline aquifers that were refined through model calibrations are shown in Figures 12-15. The transmissivity of the Chicot aquifer ranged from about 3,000 ft²/d (279 m²/d) to about 50,000 ft²/d (4,645 m²/d). The transmissivity of the Evangeline aquifer ranged from about 3,000 ft²/d (279 m²/d) to about 15,000 ft²/d (1,394 m²/d).

Storage Coefficients

Aquifers

Estimates of the storage coefficients of the aquifers were originally determined from aquifer-test data that were analyzed by the Theis (1935) equation or the modified Hantush (1960) equation, and multiplication of the average sand thickness of the aquifer by 1.0×10^{-6} feet⁻¹ (3.3×10^{-6} m⁻¹) as suggested by Lohman (1972). The areal distribution of storage coefficients that were obtained by model calibration is shown in Figures 12-15. The storage coefficient of the Chicot aquifer ranged from about 0.0004 to about 0.1; the storage coefficient of the Evangeline aquifer ranged from about 0.0005 to about 0.1. The larger values are in the outcrop areas where the aquifers are under water-table conditions; the smaller values are in the artesian zones.

Clay Beds

The storage coefficients of the clay beds are included in the models because considerable amounts of water are released from the clay beds as water is pumped from the aquifers. This release of water allows the clay beds to compact, which in turn causes subsidence of the land surface. In the Houston area, subsidence is directly proportional to the volume of water derived from the clay beds because nearly all of the subsidence is related to ground-water pumping. In other parts of the coastal area, subsidence is related to the production of oil and gas in addition to ground-water pumping.

The rate and amount of compaction of the clay beds is dependent on overburden loading, hydraulic conductivity of the clays, previous compaction, length of the drainage path, and charac-

teristics of the clays. In general, clays compact more rapidly if the pressure causing compaction is greater than previous pressure or "preconsolidation load." Reported values of the "compaction ratio," which is the ratio of the volume of land-surface subsidence to the volume of water pumped, range from about 0.17 to 0.22 in the Houston area (Jorgensen, 1975, p. 49).

By relating subsidence of the land surface, clay thickness, and decrease in artesian pressure, the following method was used to derive the storage coefficients of the clay beds in the Houston area. The assumption was made that one-half of the subsidence occurred in model layer 2 and one-half occurred in layer 4. Distribution of clay-storage values for layers 2 and 4 were obtained for 1943-73 by first calculating specific unit-compaction where subsidence data were available. The specific unit-compaction for the clay in layer 4 was determined at a given node as follows:

$$\begin{array}{lcl} \text{Specific unit-} & \frac{1/2 \text{ total subsidence for the time period}}{\text{compaction in}} & \\ \text{layer 4} & = \frac{\text{clay thickness in layer 4}}{\text{in layer 4}} \times \text{artesian-pressure decrease in the Chicot aquifer for a given time period} & (1) \end{array}$$

The specific unit-compaction for the clay in layer 2 was determined in a similar manner by using the clay thickness in layer 2 and the artesian-pressure decrease in the Evangeline aquifer. The two specific unit-compaction values were then averaged to compute a mean specific unit-compaction for layers 2 and 4. The mean value for each layer was then multiplied by the thickness of clay (Figures 16-19) at each node to obtain the storage coefficients for each layer.

Specific unit-compaction values are an approximation of specific storage if the resulting compaction approximates the ultimate compaction expected from an applied stress. The mean specific unit-compaction values determined for the model of the Houston subregion for 1943-73 are 1.0×10^{-4} feet⁻¹ (3.2×10^{-4} m⁻¹) for layer 4 and 1.8×10^{-5} feet⁻¹ (5.9×10^{-5} m⁻¹) for layer 2. The inelastic storage coefficients used in the models, which were obtained as the product of the mean specific unit-compaction and the clay thickness, ranged from 5.8×10^{-3} to 5.0×10^{-2} . In comparison, the minimum inelastic storage coefficients for the clay beds, as indicated by the ratio of subsidence to water-level declines, ranged from 5×10^{-3} to 3×10^{-2} (Jorgensen, 1975, p. 44). Elastic storage coefficients used in the models for the clay beds were obtained from model calibrations.

The decision to assign one-half of the subsidence to layer 2 and one-half to layer 4 for calculating specific unit-compaction was based primarily on data from a compaction monitor at Seabrook. Data from this site indicated that about 55 percent of the subsidence resulted from compaction of the clay beds in the Chicot aquifer and about 45 percent resulted from compaction of the clay beds in the Evangeline aquifer. However, because of the lack of data to define a more accurate spatial distribution of clay storage, 50 percent of the subsidence was assigned to each unit on a regional basis. The error resulting from this assumption is minimized because even though the specific unit-compaction of the Evangeline aquifer usually is smaller than that of the Chicot aquifer, the clay thickness and water-level declines in the Evangeline usually are greater. Therefore, the amount of subsidence occurring within each unit tends to be approximately equal. In addition, the calibration procedure indicated that the models are only moderately sensitive to storage in clay beds, which would further minimize the error of this assumption.

The storage coefficients of the clay beds were used in the model to represent approximately the elastic response for a stress that is less than the preconsolidation loading and to represent approximately the inelastic response for a stress exceeding the preconsolidation loading. These storage coefficients, or slightly modified coefficients, were used later in the other modeled subregions.

A preconsolidation-stress variable (critical head) is used in the models to control the initial change in storage in clay beds at any given node as a function of head decline. This variable represents the maximum antecedent effective stress to which a deposit has been subjected and the stress that it can withstand without undergoing permanent deformation. Stress changes less than the preconsolidation stress produce elastic deformations of small magnitude. Within this range, the clay beds have smaller storage coefficients than if the preconsolidation stress is exceeded.

The preconsolidation stress approximates the maximum effective stress to which deposits within the study area have been subjected prior to ground-water development. This preconsolidation stress, as determined by calibration of the model of the Houston subregion, is 70 feet (21 m), which means that 70 feet (21 m) of head decline must occur at a node before the model converts to an inelastic storage value. However, the lowest head value computed at a node is retained and becomes the control for changes in storage in clay beds after the preconsolidation stress is reached. The preconsolidation stress of 70 feet (21 m) was assumed to be applicable in the models of the other subregions.

The maximum effective stress to which the clay deposits at a node have been subjected is represented by the lowest head value. After the initial change in head at a node, storage in clay beds is allowed to return to preconsolidation values when the computed head rises above the lowest head value retained. If the head declines below the lowest head value retained, storage is again changed to the consolidation value for that node.

The quantity of water that was derived from storage in the clay beds was computed by the models and summarized as a total contribution from the clay beds. The volume per model node was obtained by multiplying the water-level decline, in feet, by the apparent storage coefficient and by the area of the node, in square feet. The volume of water that originated in the clay beds ranged from 16 to 31 percent of the water pumped in the model simulations.

Effective Vertical Hydraulic Conductivity and Vertical Leakage

The effective vertical hydraulic conductivity of the aquifers is controlled primarily by the clay beds that occur within the vertical sequence of sand beds. By using three different clay layers, Jorgensen (1975, p. 54) estimated that the effective vertical hydraulic conductivity ranges from as little as 10^{-7} ft/d (0.3×10^{-7} m/d) to as much as 1 ft/d (0.3 m/d). Because of the large differences in the estimated effective vertical hydraulic conductivity, the values used in the models were determined by model calibration.

Effective vertical hydraulic conductivity as determined by calibration of the models ranged from 9.2×10^{-5} to 2.3×10^{-4} ft/d (2.8×10^{-5} to 0.7×10^{-5} m/d). The effective vertical hydraulic conductivity from the land surface to the centerline of the Chicot aquifer ranged from 3.2×10^{-5} to 2.3×10^{-4} ft/d (0.98×10^{-6} to 0.7×10^{-5} m/d). The effective vertical hydraulic conductivity from

the centerline of the Chicot aquifer to the centerline of the Evangeline aquifer ranged from 9.2×10^{-5} to 4.6×10^{-3} ft/d (2.8×10^{-5} to 1.4×10^{-3} m/d).

Vertical leakage from the uppermost layer ranged from 21 to 47 percent of the amount of water pumped in the model simulations. The maximum vertical leakage per square mile ranged from 0.24 to 4.3 in/yr (0.61 to 10.9 cm/yr) at the end of 1975.

Declines in the Altitudes of the Potentiometric Surfaces

Maps showing declines in the altitudes of the potentiometric surfaces were constructed for the lower unit of the Chicot aquifer, the Chicot aquifer undifferentiated, and the Evangeline aquifer. Maps for the Houston subregion were constructed for 1890-1970 and 1890-1975. Maps for the other subregions were constructed for 1900-1970 and 1900-1975.

The maps were constructed to show the approximate altitude of the potentiometric surface at the centerline of the aquifer. However, it should be noted that wells screened at different depths in an anisotropic aquifer will probably have different depths to water, even if the wells are within a few feet of each other. Most single-screened wells in an area will have depths to water of about plus or minus 10 feet (3 m) of the depth used to construct the maps showing the declines in the altitudes of the potentiometric surfaces.

CALIBRATION AND SENSITIVITY OF THE MODELS

The models were calibrated by simulating the declines in the altitude of the potentiometric surfaces and comparing the simulated declines to the declines obtained from historic measurements for all models from 1890 or 1900 to 1970 except the Houston model, which was calibrated from 1890 or 1900 to 1975. Where the comparison of the observed declines and the simulated declines was poor, the hydrologic properties were modified and the models were tested again. This procedure was continued until the models satisfactorily simulated the observed declines. The grid patterns of the models, the observed and simulated declines in the altitude of the potentiometric surfaces, and the observed and simulated subsidence of the land surface are shown as follows:

Eastern-subregion model	— Figures 20-25
Houston-subregion model	— Figures 26-31
Central-subregion model	— Figures 32-37
Southern-subregion model	— Figures 38-43

For each of the subregions, the models were calibrated on "minimodels" (grids not shown). Each minimodel grid was composed of about one-half or less of the number of nodes that were used in the maximodel grids. Programs were written to transfer data from the maximodels to the minimodels. Results are shown from the maximodel runs in this report. The use of the "minimodels" permitted a number of relatively inexpensive computations to be used in calibrating the models. The calibrations indicated that the models were very sensitive to variations in storage in water-table aquifers and transmissivity. They are less sensitive to variations in storage in artesian aquifers and to variations in storage in clay beds. Previous testing of the model of the Houston area (Meyer and Carr, 1979) with a constant-head boundary showed that the boundary effects were minimal within short distances of the boundaries.

Some important relationships that were indicated by the calibration procedure are:

1. A large part of the Chicot aquifer in the updip section is under water-table conditions.
2. Vertical leakage of water, exclusive of irrigation returns, from the land surface to the lower part of the Chicot aquifer is an important part of the hydrologic system; however, this decreases in importance in the southern subregion.
3. Transmissivity values as determined by model calibration are about 70 to 80 percent of the value obtained by the Theis equation alone.
4. Verification was made of the interpretation by Jorgensen (1975) that in the Katy area, large amounts of water are exchanged between aquifers through irrigation wells and other wells that are open to more than one aquifer; and as much as 30 percent of the water pumped for irrigation returns to the Chicot aquifer in this area.

LIMITATIONS ON USE OF THE MODELS

The values of the hydrologic properties modeled are rational values for the hydrologic system; however, further investigations and the acquisition of additional data will allow more accurate determination of these values. The models were designed to simulate the effects of withdrawals of water from a well field for periods of 1 year or longer; the models were not designed to simulate the effects of one well pumping for a short period of time. The models were not designed to predict land-surface subsidence accurately; although the simulation of clay compaction was included. For a more accurate simulation of subsidence, more detailed data on local areas will be needed.

DATA NEEDED FOR IMPROVEMENT OF THE MODELS

The hydrologic data that are most needed to improve the models are: (1) Water-level data from observation wells that are screened in only one water-bearing unit; (2) additional data on the quantity of water pumped for irrigation; (3) more accurate determination of storage coefficients for the clay beds in each aquifer; (4) data to determine compaction coefficients for areas outside the Houston area; and (5) more detailed information on the thickness of the clay beds.

SUMMARY

The Texas Gulf Coast has two major aquifers above the Burkeville confining layer, the Chicot and the Evangeline. Both aquifers consist of alternating layers of sand and clay that dip gently towards the Gulf of Mexico. The Chicot aquifer is the uppermost one and in some places along the coast, mainly in the Houston area, it can be separated into an upper and a lower unit. The upper unit, which is not an important source of water along most of the Texas Gulf Coast, can be separated from the lower unit by differences in hydraulic head. Where the units cannot be separated, the aquifer is said to be undifferentiated. The Evangeline aquifer underlies the Chicot aquifer and also can be separated from it by a difference in head.

Large withdrawals of ground water along the coast have resulted in major cones of depression in the potentiometric surface in the lower unit of the Chicot aquifer and the Evangeline aquifer. Withdrawals of ground water have also resulted in land-surface subsidence along the coast of as much as 8.5 feet (2.6 m) within the Houston area.

Digital-computer models were constructed to study the hydrology of the coastal area and to simulate the decline in the altitude of the potentiometric surfaces. The models were verified, where possible, for declines in the altitude of the potentiometric surface of both aquifers from 1890 to 1975 for the Houston subregion and from 1900 to 1970 for all other subregions. In addition, all models also were verified for the volume of water derived from clay compaction where possible. The models are very sensitive to variations in aquifer transmissivity and in storage in water-table aquifers; they are less sensitive to variations in storage in artesian aquifers and in clay beds.

The model results indicate that a large part of the Chicot aquifer in the updip section is under water-table conditions, that vertical leakage is an important part of the hydrologic system, and that transmissivity values as determined by model calibration are about 70 to 80 percent of those obtained by the Theis equation alone.

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Reference 29:

Texas Commission on Environmental Quality. Telephone Memo to the File. Dated January 13, 2011. 1 page.

Call For: Rick Helton, City of Pasadena Public Water Supply

From: Texas Commission on Environmental Quality, Region 12
5425 Polk Ave.
Houston, TX 77023

Company: City of Pasadena
P.O. Box 672
Pasadena, TX 77501

Date: January 13, 2010

Time: 02:30PM

Phone: (713) 477-7639 or (713) 475-7286

Message: Currently, the groundwater wells operated by the City of Pasadena are only used as an emergency supply and only produce approximately 1% of the total water supply.

Action: phoned

Taken By: Lam Tran

Reference 30:

Harris-Galveston Subsidence District. Well Data Permitted By District Within 4 Miles of 400 North Richey Street, Pasadena, Texas. January 2011. 6 pages.

Harris-Galveston Subsidence District

1660 West Bay Area Blvd.
Friendswood, TX 77546-2640
www.subsidence.org
Phone: (281) 486-1105 Fax: (281) 218-3700

COMPANY : TCEQ

PROJECT NO.: USOR

Terry Andrews,

Due to the large volume of requests for well data, it has been necessary to standardize our output format.

The enclosed listing shows all the sites on which wells have been permitted by the district within 4 mile(s) of the following point in the order of distance from that center point, (i.e. closest to farthest):

LATITUDE	29 DEG	43 MIN	6 SEC
LONGITUDE	95 DEG	13 MIN	17 SEC

Please note: It is possible that some of these sites may not actually have a producing well on them. We do not guarantee that these are the only wells within the range specified, only that these are the wells that are permitted with the district within this range. We regret that we cannot customize our output to individual specifications and hope that the enclosed list will serve your needs.

REPORT HEADINGS :

LATITUDE/LONGITUDE - (degrees, minutes, seconds)

STATE#/YRDRLD - State Map Reference (block, quad, ninth) / Year Drilled

DTFS/DEPTH - Depth To First Screen / Total Depth

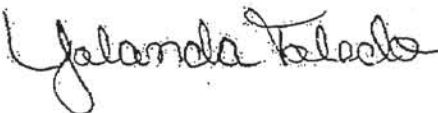
DIST/ELEV - Distance from your Reference Point / Elevation in feet above sea

APPROXIMATE XX PUMPAGE - Approximate number of gallons pumped for given year

USE - Purpose of well (Agricultural, Industrial, Other, Public supply)

DIAM - Diameter of casing in inches

Sincerely,



Yolanda Toledo
Permit System Secretary and Cashier

HGCSD - WELL RADIUS LISTING

PROJECT NO.: USOR

WELL	OWNERS - NAME	LATITUDE LONGITUDE	STATE NO YRDRLLD	DTFS DEPTH	DIST ELEV	APPROX 2009 PUMPAGE USE DIAM
10482	Taylor, Raymond	29-41-32 95-16-16	65-22-6 2007	380 400	3.83 25	0 P 4
1051	Houston, City of	29-42-15 95-15-54	65-22-6 1948	999 2365	3.13 33	0 P 24
1052	Houston, City of	29-41-48 95-15-55	65-22-6 1948	999 2530	3.34 30	0 P 24
10522	ExxonMobil Environmental Services	29-44-25 95-11-14	65-23-2 2008	450 500	2.77 25	609,990 I 6
1053	Houston, City of	29-41-27 95-15-48	65-22-6 1949	945 2095	3.42 34	0 P 24
10815	Valadez, Eduardo	29-43-5 95-12-26	65-23-2 2009	110 120	0.97 25	921 D 2
11184	Ameriforge Corporation	29-45-9 95-11-27	65-15-8 2007	600 660	3.13 25	0 I 5
11518	Pasadena, City of	29-41-25 95-13-29	65-23-4 2017	1400 1600	1.93 30	0 P 8
1162	AES Western Power, LLC	29-43-26 95-13-40	65-23-1 1965	644 776	0.58 13	0 I 16
1163	AES Western Power, LLC	29-43-28 95-13-30	65-23-1 1954	660 930	0.48 14	0 I 18
1164	AES Western Power, LLC	29-43-15 95-13-31	65-23-1 1972	660 940	0.32 19	0 I 20
1207	Pasadena, City of	29-41-2 95-12-30	65-23-5 1948	865 1565	2.51 35	46,446,125 P 20
1208	PASADENA, CITY OF	29-39-58 95-12-0	65-23-8 1957	824 1292	3.85 35	0 P 12
1209	Pasadena, City of	29-39-58 95-12-9	65-23-8 1965	820 1380	3.79 35	46,446,125 P 16
1213	Pasadena, City of	29-42-2 95-10-0	65-23-6 1966	740 1170	3.92 35	46,446,125 P 16
1215	Pasadena, City of	29-42-18 95-11-14	65-23-5 1950	999 1236	2.50 35	46,446,125 P 12
1216	PASADENA, CITY OF	29-42-44 95-12-43	65-23-1 1950	667 1262	0.77 35	0 P 12
1225	Albermarle Corporation	29-44-41 95-10-11	65-23-2 1951	309 453	3.96 10	9,210,750 I 20
1227	Albermarle Corporation	29-44-24 95-10-16	65-23-2 1951	698 1252	3.73 10	9,210,750 I 20
1228	Albermarle Corporation	29-44-24 95-10-7	65-23-2 1951	329 477	3.89 9	9,210,750 I 20

HGCSD - WELL RADIUS LISTING

PROJECT NO.: USOR

WELL	OWNERS - NAME	LATITUDE LONGITUDE	STATE NO YRDRLLD	DTFS DEPTH	DIST ELEV	APPROX 2009 PUMPAGE USE DIAM
4380	AIR PRODUCTS MANUFACTURING CORP.	29-43-4 95-11-36	65-23-2 1990	20 35	1.91 25	0 I 4
4381	AIR PRODUCTS MANUFACTURING CORP.	29-43-4 95-11-36	65-23-2 1990	20 35	1.91 25	0 I 4
4382	AIR PRODUCTS MANUFACTURING CORP.	29-43-4 95-11-36	65-23-2 1990	20 35	1.91 25	0 I 4
4383	AIR PRODUCTS MANUFACTURING CORP.	29-43-4 95-11-36	65-23-2 1990	20 35	1.91 25	0 I 4
4384	AIR PRODUCTS MANUFACTURING CORP.	29-43-4 95-11-36	65-23-2 1990	20 35	1.91 25	0 I 4
4385	AIR PRODUCTS MANUFACTURING CORP.	29-43-4 95-11-36	65-23-2 1990	20 35	1.91 25	0 I 4
4397	Trinity Industries, Inc.	29-45-27 95-10-49	65-15-8 1970	0 330	3.87 13	0 I 4
4398	Trinity Industries, Inc.	29-45-13 95-10-56	65-15-8 1953	0 780	3.59 10	0 I 4
4473	AES Deepwater, Inc.	29-43-0 95-13-36	65-23-1 1987	544 599	0.38 28	0 I 6
4624	AIR PRODUCTS MANUFACTURING CORP.	29-42-54 95-11-23	65-23-2 1992	50 70	2.17 26	0 I 4
4625	AIR PRODUCTS MANUFACTURING CORP.	29-42-54 95-11-23	65-23-2 1992	50 71	2.17 26	0 I 4
4626	AIR PRODUCTS MANUFACTURING CORP.	29-43-4 95-11-36	65-23-2 1992	20 44	1.91 26	0 I 4
4627	AIR PRODUCTS MANUFACTURING CORP.	29-43-4 95-11-36	65-23-2 1992	55 76	1.91 26	0 I 4
5424	Foroni Metals of Texas, Inc.	29-45-10 95-12-12	65-15-8 1987	0 447	2.65 25	14,820 D 4
5642	Ameriforge Corporation	29-45-4 95-11-25	65-15-8 19??	0 0	3.08 25	3,573,950 I 6
5835	Ameriforge Corporation	29-45-7 95-11-12	65-15-8 1987	415 435	3.29 25	3,573,950 I 4
5928	North Texas Cement Company	29-43-33 95-15-0	65-22-3 1940	400 500	2.02 25	0 P 4
6058	Greens Port Industrial Park	29-45-16 95-11-33	65-15-8 1988	292 475	3.15 25	0 I 4
6313	Boltex Mfg. Co., LP	29-45-5 95-11-41	65-15-8 1998	590 680	2.90 25	4,592,000 I 6
6314	BOLTEX MFG. CO., L.P.	29-45-1 95-11-45	65-15-8 19??	590 680	2.79 25	0 I 6

HGCSD - WELL RADIUS LISTING

PROJECT NO.: USOR

WELL	OWNERS - NAME	LATITUDE LONGITUDE	STATE NO YRDRLLD	DTFS DEPTH	DIST ELEV	APPROX 2009 PUMPAGE USE DIAM
8147	Steel & Pipe Supply Company	29-44-6 95-11-59	65-23-2 1982	0 180	1.86 25	18,000 D 3
8926	Galena Park I.S.D.	29-45-29 95-13-59	65-15-5 2002	375 400	2.82 35	97,365 O 5

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Total 2009 pumpage for the above wells is 765,737,468

HGCSD - WELL RADIUS LISTING

PROJECT NO.: USOR

WELL	OWNERS - NAME	LATITUDE LONGITUDE	STATE NO YRDRLLD	DTFS DEPTH	DIST ELEV	APPROX 2009 PUMPAGE USE DIAM
2024	PARKER BROTHERS & CO., INC.	29-40-45 95-15-11	65-22-6 1951	345 370	3.43 35	0 I 4
2025	PARKER BROTHERS & CO., INC.	29-40-45 95-15-11	65-22-6 1950	338 360	3.43 35	0 I 4
2100	REDDY ICE LTD.	29-42-42 95-12-27	65-23-2 1947	350 350	1.05 25	0 I 6
2103	GATX TERMINALS CORPORATION	29-43-55 95-12-11	65-23-2 1987	535 750	1.56 48	0 I 5
2104	GATX TERMINALS CORPORATION	29-43-43 95-12-15	65-23-2 1976	471 700	1.37 45	0 I 5
2105	AMERADA HESS CORPORATION	29-44-53 95-11-56	65-23-2 1971	778 948	2.54 5	0 I 10
2260	Exxon Pipeline Company	29-42-55 95-9-52	65-23-2 1976	530 550	3.89 27	0 I 4
2349	PIONEER CONCRETE OF TEXAS, INC.	29-43-28 95-10-10	65-23-2 1974	602 638	3.57 31	0 I 6
2350	LONE STAR INDUSTRIES, INC.	29-42-21 95-15-22	65-22-6 1968	592 0	2.52 30	0 I 4
2376	LONE STAR IND., INC.-CEMENT DIV.	29-43-18 95-16-2	65-22-3 1951	930 1062	3.13 38	0 I 10
2377	LONE STAR IND., INC.-CEMENT DIV.	29-43-15 95-16-10	65-22-3 1974	915 1104	3.28 35	0 I 12
2378	LONE STAR IND., INC.-CEMENT DIV.	29-43-15 95-16-10	65-22-3 1956	710 832	3.28 35	0 I 12
2529	FIRST PASADENA STATE BANK	29-41-29 95-11-54	65-23-5 1963	586 812	2.42 35	0 P 8
2695	Brown & Root, Inc.	29-45-8 95-10-43	65-15-8 1967	828 1091	3.72 17	0 I 4
2733	AIR VENT AWNING COMPANY	29-40-25 95-13-52	65-23-4 1961	264 278	3.12 30	0 I 6
2805	STAR ENTERPRISE	29-46-12 95-12-23	65-15-8 1964	434 449	3.67 30	0 I 4
2847	HOUSTON SHELL & CONCRETE	29-43-12 95-12-31	65-23-1 1958	40 485	0.88 40	0 I 4
2848	HOUSTON SHELL & CONCRETE	29-43-12 95-12-31	65-23-1 1958	600 640	0.88 40	0 I 6
2849	HOUSTON SHELL & CONCRETE	29-43-12 95-12-31	65-23-1 1974	445 485	0.88 40	0 I 6
3149	CenterPoint Energy Houston Electric, LLC	29-43-16 95-9-54	65-23-3 1978	238 248	3.85 31	42,000 D 4

HGCSD - WELL RADIUS LISTING

PROJECT NO.: USOR

WELL	OWNERS - NAME	LATITUDE LONGITUDE	STATE NO YRDRLLD	DTFS DEPTH	DIST ELEV	APPROX 2009 PUMPAGE USE DIAM
3248	SIGMOR CORPORATION	29-46-16 95-13-33	65-15-7 1971	0 0	3.61 30	0 1 4
3425	LONE STAR IND., INC.-CEMENT DIV.	29-43-34 95-10-23	65-23-2 1972	346 356	3.34 31	0 1 4
3541	LONE STAR IND., INC.-CEMENT DIV.	29-43-34 95-10-19	65-23-2 1980	665 685	3.41 31	0 1 4
3690	South Houston, City of	29-39-50 95-14-25	65-23-7 1982	850 1200	3.93 35	25,677,600 P 16
4116	CenterPoint Energy Houston Electric, LLC	29-43-8 95-13-34	65-23-1 1986	650 660	0.32 20	42,000 D 4
4203	ARA LIVING CENTERS	29-40-26 95-12-0	65-23-5 197?	450 500	3.36 32	0 P 4
4268	AIR PRODUCTS MANUFACTURING CORP.	29-42-54 95-11-23	65-23-2 1988	18 36	2.17 26	0 1 4
4269	AIR PRODUCTS MANUFACTURING CORP.	29-42-54 95-11-23	65-23-2 1988	18 36	2.17 26	0 1 4
4270	AIR PRODUCTS MANUFACTURING CORP.	29-42-54 95-11-23	65-23-2 1988	18 36	2.17 26	0 1 4
4271	AIR PRODUCTS MANUFACTURING CORP.	29-42-54 95-11-28	65-23-2 1988	18 36	2.08 26	0 1 4
4272	AIR PRODUCTS MANUFACTURING CORP.	29-42-54 95-11-23	65-23-2 1988	18 36	2.17 26	0 1 4
4273	AIR PRODUCTS MANUFACTURING CORP.	29-42-54 95-11-23	65-23-2 1988	18 36	2.17 26	0 1 4
4274	AIR PRODUCTS MANUFACTURING CORP.	29-42-54 95-11-23	65-23-2 1988	18 36	2.17 26	0 1 4
4275	AIR PRODUCTS MANUFACTURING CORP.	29-42-54 95-11-23	65-23-2 1988	18 36	2.17 26	0 1 4
4276	AIR PRODUCTS MANUFACTURING CORP.	29-42-54 95-11-23	65-23-2 1988	18 36	2.17 26	0 1 4
4277	AIR PRODUCTS MANUFACTURING CORP.	29-42-54 95-11-23	65-23-2 1988	18 36	2.17 26	0 1 4
4376	AIR PRODUCTS MANUFACTURING CORP.	29-43-4 95-11-36	65-23-2 1990	20 35	1.91 25	0 1 4
4377	AIR PRODUCTS MANUFACTURING CORP.	29-43-4 95-11-36	65-23-2 1990	20 35	1.91 25	0 1 4
4378	AIR PRODUCTS MANUFACTURING CORP.	29-43-4 95-11-36	65-23-2 1990	20 35	1.91 25	0 1 4
4379	AIR PRODUCTS MANUFACTURING CORP.	29-43-4 95-11-36	65-23-2 1990	20 35	1.91 25	0 1 4

HGCSD - WELL RADIUS LISTING

PROJECT NO.: USOR

WELL	OWNERS - NAME	LATITUDE LONGITUDE	STATE NO YRDRLLD	DTFS DEPTH	DIST ELEV	APPROX 2009 PUMPAGE USE DIAM
1435	Valero Refining Texas, L.P.	29-43-28 95-15-17	65-22-3 1955	922 1169	2.31 27	533,250 16
1436	Valero Refining Texas, L.P.	29-43-18 95-15-4	65-22-3 1945	916 1191	2.04 25	533,250 18
1437	HILL PETROLEUM COMPANY	29-43-20 95-15-4	65-22-3 1959	957 1168	2.04 25	0 14
1458	WSP Pipe LLC	29-45-26 95-11-32	65-15-8 1968	999 1706	3.31 35	43,601 5
1459	Armco, Inc.	29-45-23 95-11-40	65-15-8 1949	650 1102	3.18 35	0 18
1460	Armco, Inc.	29-44-57 95-12-41	65-23-1 1970	790 1711	2.21 35	0 18
1461	Armco, Inc.	29-45-23 95-12-5	65-15-8 1967	809 1692	2.93 35	0 24
1462	Greens Port Industrial Park	29-45-6 95-11-47	65-23-2 1964	532 730	2.84 35	0 22
1463	Armco, Inc.	29-45-16 95-11-41	65-15-8 1941	591 713	3.06 35	0 16
1464	Armco, Inc.	29-45-22 95-12-5	65-15-8 1957	848 1440	2.91 35	0 24
1465	Armco, Inc.	29-45-8 95-11-22	65-15-8 1944	839 1381	3.18 35	0 18
1466	Armco, Inc.	29-45-13 95-12-14	65-15-8 1944	918 1384	2.68 35	0 18
1467	ARMCO, INC.	29-45-10 95-11-50	65-15-8 1945	830 1266	2.87 43	0 18
1468	Armco, Inc.	29-44-47 95-11-44	65-23-2 1943	778 1255	2.60 20	0 18
1469	Armco, Inc.	29-44-50 95-11-29	65-23-2 1943	830 1266	2.84 20	0 18
1470	Greens Port Industrial Park	29-45-6 95-11-47	65-23-2 1943	947 1385	2.84 30	0 18
1471	IDEAL BASIC INDUSTRIES-CEMENT	29-43-45 95-14-54	65-23-1 1986	600 1804	1.98 18	0 16
1472	IDEAL BASIC INDUSTRIES-CEMENT	29-43-47 95-14-39	65-23-1 1986	600 1084	1.74 18	0 16
1473	Jacinto City, City of	29-46-4 95-14-49	65-15-7 1949	581 895	3.79 7	0 P 8
1474	Jacinto City, City of	29-46-20 95-14-31	65-15-7 1959	390 1006	3.93 7	0 P 8

HGCSD - WELL RADIUS LISTING

PROJECT NO.: USOR

WELL	OWNERS - NAME	LATITUDE LONGITUDE	STATE NO YRDRLLD	DTFS DEPTH	DIST ELEV	APPROX 2009 PUMPAGE USE DIAM
1235	S D S BIOTECH CORPORATION	29-45-44 95-11-1	65-15-8 1952	0 0	3.95 25	0 1 14
1338	Pasadena Refining Sytem, Inc.	29-43-16 95-12-31	65-23-1 1969	999 1827	0.89 29	4,859,000 1 14
1339	Pasadena Refining Sytem, Inc.	29-43-13 95-12-19	65-23-1 1944	0 922	1.11 34	4,859,000 1 10
1340	CROWN CENTRAL PETROLEUM CORP.	29-43-12 95-12-34	65-23-1 1944	999 1260	0.82 34	0 1 12
1341	CROWN CENTRAL PETROLEUM CORP.	29-43-23 95-12-20	65-23-2 1944	680 1262	1.13 32	0 1 12
1342	Pasadena Refining Sytem, Inc.	29-43-16 95-12-31	65-23-2 1950	816 1274	0.89 34	4,859,000 1 16
1402	MOBIL CHEMICAL CO.	29-42-21 95-15-1	65-22-6 1960	812 1192	2.15 32	0 1 16
1403	PL Propylene LLC	29-42-14 95-15-2	65-22-6 1965	636 1154	2.22 32	304,040 1 16
1404	PL Propylene LLC	29-42-11 95-14-57	65-22-6 1965	662 1207	2.16 32	304,040 1 16
1405	PL Propylene LLC	29-42-11 95-15-6	65-22-6 1960	809 1195	2.31 32	304,040 1 16
1413	LYONDELL PETROCHEMICAL CO.	29-43-7 95-13-48	65-23-1 1934	999 1700	0.59 33	0 1 24
1414	Houston Refining, LP	29-42-36 95-14-26	65-23-1 1940	938 1192	1.42 33	11,826,000 1 20
1415	Houston Refining, LP	29-42-36 95-14-2	65-23-1 1942	904 1226	1.02 33	11,826,000 1 20
1416	Houston Refining, LP	29-42-45 95-13-56	65-23-1 1947	999 1844	0.84 35	11,826,000 1 20
1420	Goodyear Tire & Rubber Company	29-42-14 95-15-20	65-22-6 1956	848 1205	2.53 30	24,351,495 1 14
1421	Goodyear Tire & Rubber Company	29-42-17 95-15-25	65-22-6 1958	850 1205	2.60 30	24,351,495 1 14
1431	MANCHESTER TERMINAL COMPANY	29-43-7 95-14-54	65-23-1 1950	65 771	1.84 25	0 1 12
1432	Valero Refining Texas, L.P.	29-43-22 95-15-17	65-22-3 1961	970 1161	2.29 35	533,250 1 14
1433	Valero Refining Texas, L.P.	29-43-26 95-15-13	65-22-3 1960	955 1100	2.23 33	533,250 1 14
1434	HILL PETROLEUM COMPANY	29-43-30 95-15-24	65-22-3 1957	900 1182	2.45 28	0 1 16

HGCSD - WELL RADIUS LISTING

PROJECT NO.: USOR

WELL	OWNERS - NAME	LATITUDE LONGITUDE	STATE NO YRDRLLD	DTFS DEPTH	DIST ELEV	APPROX 2009 PUMPAGE USE DIAM
1475	Jacinto City, City of	29-46-6 95-14-37	65-15-7 1954	510 780	3.73 7	0 P 8
1476	GALENA PARK, CITY OF	29-44-2 95-14-18	65-23-1 1936	597 678	1.57 28	0 P 12
1477	Galena Park, City of	29-44-2 95-14-18	65-23-1 1942	584 740	1.57 28	0 P 12
1478	Galena Park, City of	29-44-3 95-14-17	65-23-1 1949	935 1205	1.57 28	1,897,500 P 18
1479	Galena Park, City of	29-44-45 95-14-12	65-23-1 1951	607 1351	2.14 31	0 P 20
1480	Galena Park, City of	29-44-45 95-14-14	65-23-1 1959	730 975	2.16 31	1,897,500 P 16
1495	STAUFFER CHEMICAL COMPANY	29-43-15 95-16-12	65-22-3 1927	601 1146	3.32 40	0 I 16
1496	Rhodia Eco Services	29-43-9 95-16-18	65-22-3 1946	596 804	3.43 40	85,922,000 I 16
1497	Rhodia Eco Services	29-43-11 95-16-9	65-22-3 1952	916 1301	3.26 40	85,922,000 I 18
1505	MOBIL CHEMICAL CO. / PASADENA	29-44-27 95-11-27	65-23-2 1951	219 409	2.59 10	0 I 10
1506	MOBIL MINING & MINERALS CO.,PASA	29-44-25 95-11-32	65-23-2 1951	830 970	2.49 4	0 I 12
1507	Agrifos Fertilizer L.L.C.	29-44-20 95-11-46	65-23-2 1958	755 1100	2.22 6	8,052,767 I 14
1508	Agrifos Fertilizer L.L.C.	29-44-28 95-11-24	65-23-2 1961	760 1221	2.64 9	8,052,767 I 14
1509	MOBIL CHEMICAL CO. / PASADENA	29-44-28 95-11-36	65-23-2 1962	942 1357	2.46 6	0 I 14
1510	Agrifos Fertilizer L.L.C.	29-44-11 95-11-46	65-23-2 1965	999 1310	2.12 9	8,052,767 I 16
1573	GATX TERMINALS CORPORATION	29-43-39 95-12-18	65-23-2 1963	819 930	1.28 32	0 I 10
1595	Brown & Root, Inc.	29-45-4 95-10-25	65-15-8 1942	280 462	3.95 25	0 I 16
1680	PETRO-TEX CHEMICAL CORP.	29-42-6 95-15-10	65-22-6 1942	999 1710	2.42 34	0 I 20
1681	Texas Petrochemicals, LP	29-41-43 95-15-26	65-22-6 1942	856 1222	2.91 34	50,971,500 I 20
1682	Texas Petrochemicals, LP	29-41-59 95-15-9	65-22-6 1953	999 1712	2.47 34	50,971,500 I 20

HGCSD - WELL RADIUS LISTING

PROJECT NO.: USOR

WELL	OWNERS - NAME	LATITUDE LONGITUDE	STATE NO YRDRLLD	DTFS DEPTH	DIST ELEV	APPROX 2009 PUMPAGE USE DIAM
1685	Air Products, LLC	29-43-2 95-11-23	65-23-2 1973	940 1300	2.16 27	1,302,142 I 24
1686	Air Products, LLC	29-43-2 95-11-32	65-23-2 1972	942 1300	1.99 27	1,302,142 I 16
1714	Chemical Exchange Industries Inc.	29-43-55 95-13-37	65-23-1 1950	294 394	1.00 25	0 I 6
1715	WARREN PETROLEUM COMPANY	29-44-38 95-12-18	65-23-2 1962	450 608	2.07 18	0 I 6
1775	PHILLIPS PETROLEUM COMPANY	29-43-42 95-10-28	65-23-2 1941	0 620	3.27 7	0 I 8
1776	Chevron Phillips Chemical Co.	29-44-9 95-10-54	65-23-2 1953	0 1967	2.96 27	1,434,015 I 20
1777	Chevron Phillips Chemical Co.	29-44-10 95-10-53	65-23-2 1952	0 1220	2.98 27	1,434,015 I 20
1778	PHILLIPS PETROLEUM COMPANY	29-44-28 95-10-32	65-23-2 1951	0 886	3.49 25	0 I 22
1863	GATX TERMINALS CORPORATION	29-43-48 95-13-18	65-23-1 1945	617 1468	0.80 15	0 I 18
1959	South Houston, City of	29-39-42 95-13-51	65-23-7 1968	800 1212	3.92 34	25,677,600 P 14
1960	South Houston, City of	29-39-51 95-13-13	65-23-7 1951	990 1202	3.69 35	25,677,600 P 12
1961	South Houston, City of	29-39-52 95-14-24	65-23-7 1974	435 795	3.89 35	0 P 8
1962	South Houston, City of	29-39-48 95-14-26	65-23-7 1955	440 780	3.97 36	0 P 8
1965	South Houston, City of	29-39-38 95-12-45	65-23-7 1963	749 1210	3.99 35	25,677,600 P 14
1969	Patriot Storage, LLC	29-44-26 95-11-10	65-23-9 1965	862 1230	2.84 9	0 I 16
1970	Altivia Corp.	29-45-46 95-11-1	65-15-8 1951	0 1242	3.98 15	27,986,000 I 20
1989	Densimix, Inc./E & B, Inc.	29-45-27 95-11-21	65-15-8 1951	625 720	3.46 35	0 I 8
2010	Kinder Morgan Liquid Terminals, LP	29-43-57 95-12-9	65-23-2 1950	319 340	1.61 20	0 I 8
2012	DICKSON INDUSTRIAL DISTRICT	29-43-45 95-15-35	65-22-3 1942	578 758	2.72 38	0 I 12
2013	DICKSON INDUSTRIAL DISTRICT	29-44-7 95-16-32	65-22-3 1942	620 792	3.87 38	0 I 12

Reference 31:

Texas Commission on Environmental Quality. 2008 Texas Water Quality Inventory and 303(d) List. 2 pages.

2008 Texas 303(d) List (March 19, 2008)

As required under Sections 303(d) and 304(a) of the federal Clean Water Act, this list identifies the water bodies in or bordering Texas for which effluent limitations are not stringent enough to implement water quality standards, and for which the associated pollutants are suitable for measurement by maximum daily load.

In addition, the TCEQ also develops a schedule identifying Total Maximum Daily Loads (TMDLs) that will be initiated in the next two years for priority impaired waters. Issuance of permits to discharge into 303(d)-listed water bodies is described in the TCEQ regulatory guidance document *Procedures to Implement the Texas Surface Water Quality Standards* (August 2002, RG-194).

Impairments are limited to the geographic area described by the Assessment Unit and identified with a six or seven-digit AU_ID. A TMDL for each impaired parameter will be developed to allocate pollutant loads from contributing sources that affect the parameter of concern in each Assessment Unit. The TMDL will be identified and counted using a four or five-digit SegID. Water Quality permits that are issued before a TMDL is approved will not increase pollutant loading that would contribute to the impairment identified for the Assessment Unit.

Information Provided

SegID and Name:	The unique identifier (SegID), segment name, and location of the water body. The SegID may be one of two types of numbers. The first type is a classified segment number (4 digits, e.g., 0218), as defined in Appendix A of the Texas Surface Water Quality Standards (TSWQS). The second type (five digits, e.g., 0218A) is a partially classified water body described in Appendix D of the TSWQS, or an unclassified water body, not defined in the TSWQS, though associated with a classified water body because it is in the same watershed. The segment name and description immediately follow SegID.
Area:	Identifies the assessment unit (AU_ID, six or seven digits, e.g., 0101A_01) and describes the location of the specific area in which one or more water quality standards are not met.
Parameter(s):	Pollutants or water quality conditions that assessment procedures indicate do not meet assigned water quality standards.
Category:	<p>In the 2008 Assessment, one of three subcategories was assigned to each impaired parameter to provide information about water quality status and management activities on that water body. The categories are defined below:</p> <p><u>Category 5:</u> The water body does not meet applicable water quality standards or is threatened for one or more designated uses by one or more pollutants.</p> <p>Category 5a - A TMDL is underway, scheduled, or will be scheduled.</p> <p>Category 5b - A review of the water quality standards for this water body will be conducted before a TMDL is scheduled.</p> <p>Category 5c - Additional data and information will be collected before a TMDL is scheduled.</p>
Year First Listed:	The assessment year the pollutant or water quality condition in this water body initially did not meet water quality standards as indicated in any of the areas assessed (AU_IDs).

SegID: 1007 Houston Ship Channel/Buffalo Bayou Tidal

From a point immediately upstream of Greens Bayou in Harris County to a point 100 meters (110 yards) upstream of US 59 in Harris County, including tidal portion of tributaries

<u>Area</u>		<u>Category</u>	<u>Year First Listed</u>
<i>1007_01 Houston Ship Channel/Buffalo Bayou Tidal</i>			
dioxin in edible tissue	5a	1996	
PCBs in edible tissue	5a	2002	
bacteria	5c	2006	
<i>1007_02 Sims Bayou Tidal (upstream of SH 35 to Houston Ship Channel confluence)</i>			
dioxin in edible tissue	5a	1996	
PCBs in edible tissue	5a	2002	
<i>1007_03 Hunting Bayou Tidal (I-10 to confluence with Houston Ship Channel)</i>			
dioxin in edible tissue	5a	1996	
PCBs in edible tissue	5a	2002	
<i>1007_04 Brays Bayou Tidal (downstream of I 45 to confluence with the Houston Ship Channel)</i>			
dioxin in edible tissue	5a	1996	
PCBs in edible tissue	5a	2002	
<i>1007_05 Vince Bayou Tidal (SH 225 to confluence with the Houston Ship Channel)</i>			
dioxin in edible tissue	5a	1996	
PCBs in edible tissue	5a	2002	
bacteria	5c	2006	
toxicity in sediment	5c	2000	
<i>1007_06 Berry Bayou Tidal (2.4 km upstream of the Sims Bayou confluence)</i>			
dioxin in edible tissue	5a	1996	
PCBs in edible tissue	5a	2002	
<i>1007_07 Buffalo Bayou (US 59 to upstream of 69th Street WWTP)</i>			
dioxin in edible tissue	5a	1996	
PCBs in edible tissue	5a	2002	
bacteria	5c	2006	
<i>1007_08 Little Vince Bayou Tidal (From confluence with Vince Bayou to SH 225)</i>			
dioxin in edible tissue	5a	1996	
PCBs in edible tissue	5a	2002	

Reference 32:

US Fish and Wildlife Service-Natural Wetlands Inventory. MCC Recycling Wetlands. Available at <http://www.fws.gov/wetlands/Data/Mapper.html>. Accessed on September 7, 2010. 3 pages.







N

E1UBLx

Wetland Types

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

Status Map

- Digital (vector)
- Scan (raster data)
- Non-Digital (historical)
- No Data

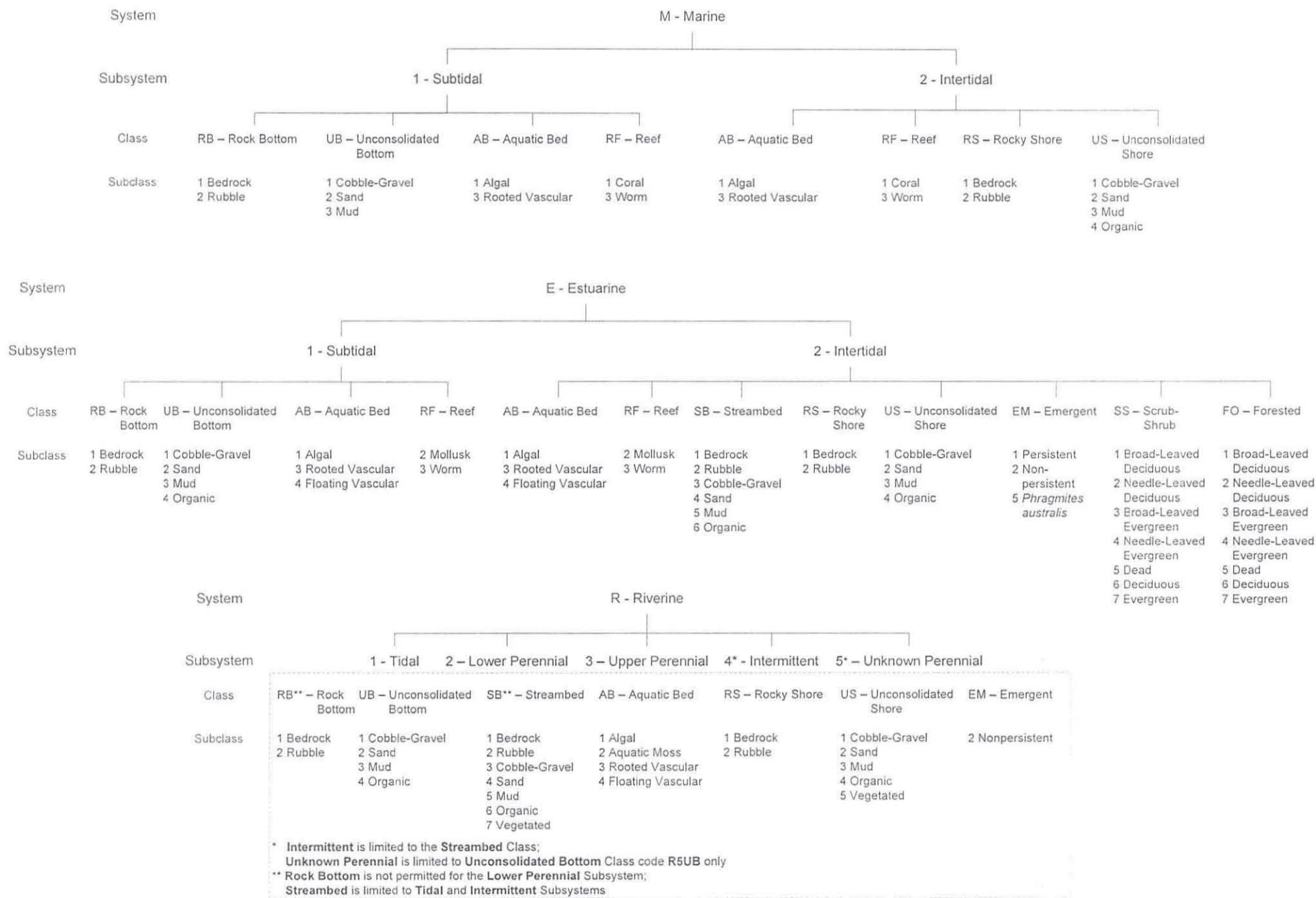
© 2011 Europa Technologies
© 2011 Google

29°42'55.09" N 95°13'07.99" W elev 1 ft

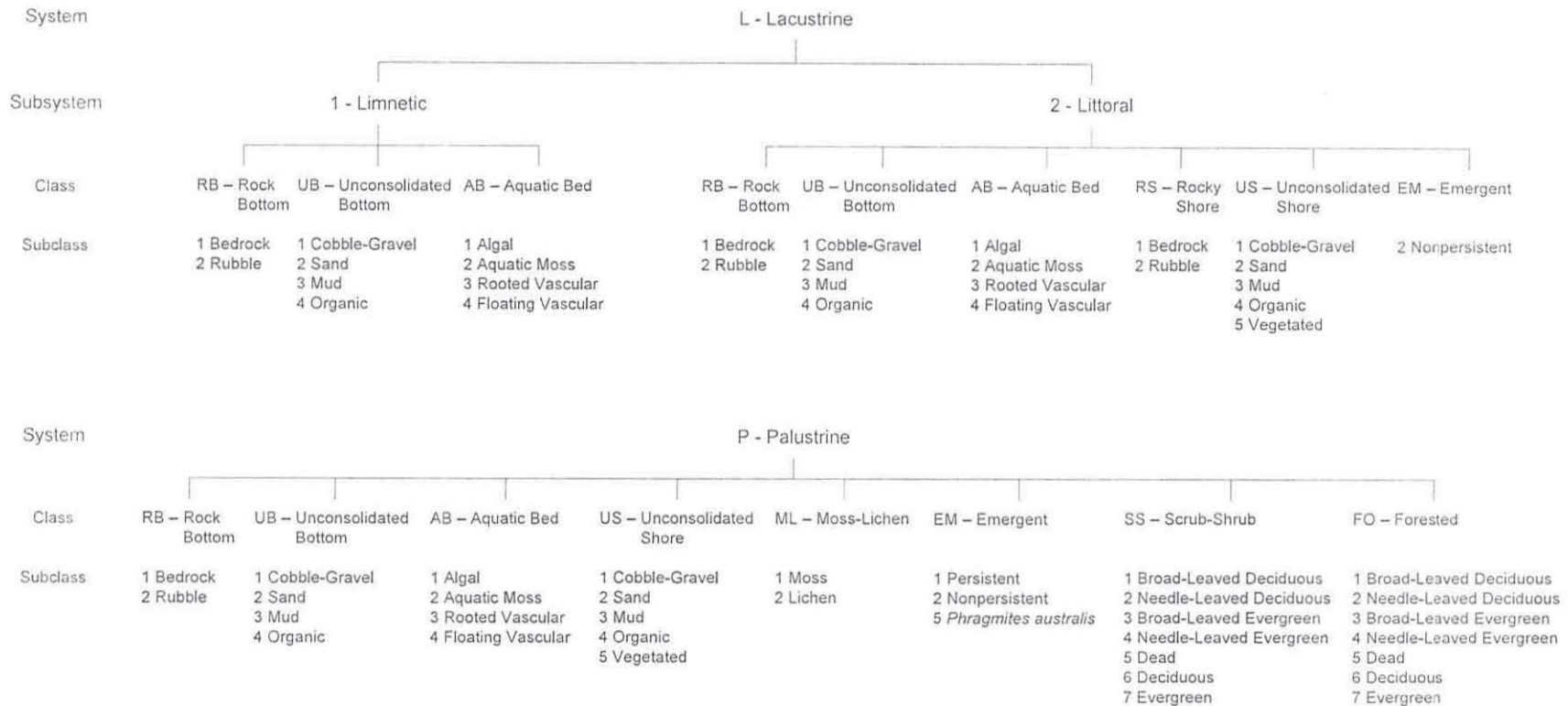
Eye alt 797 ft



WETLANDS AND DEEPWATER HABITATS CLASSIFICATION



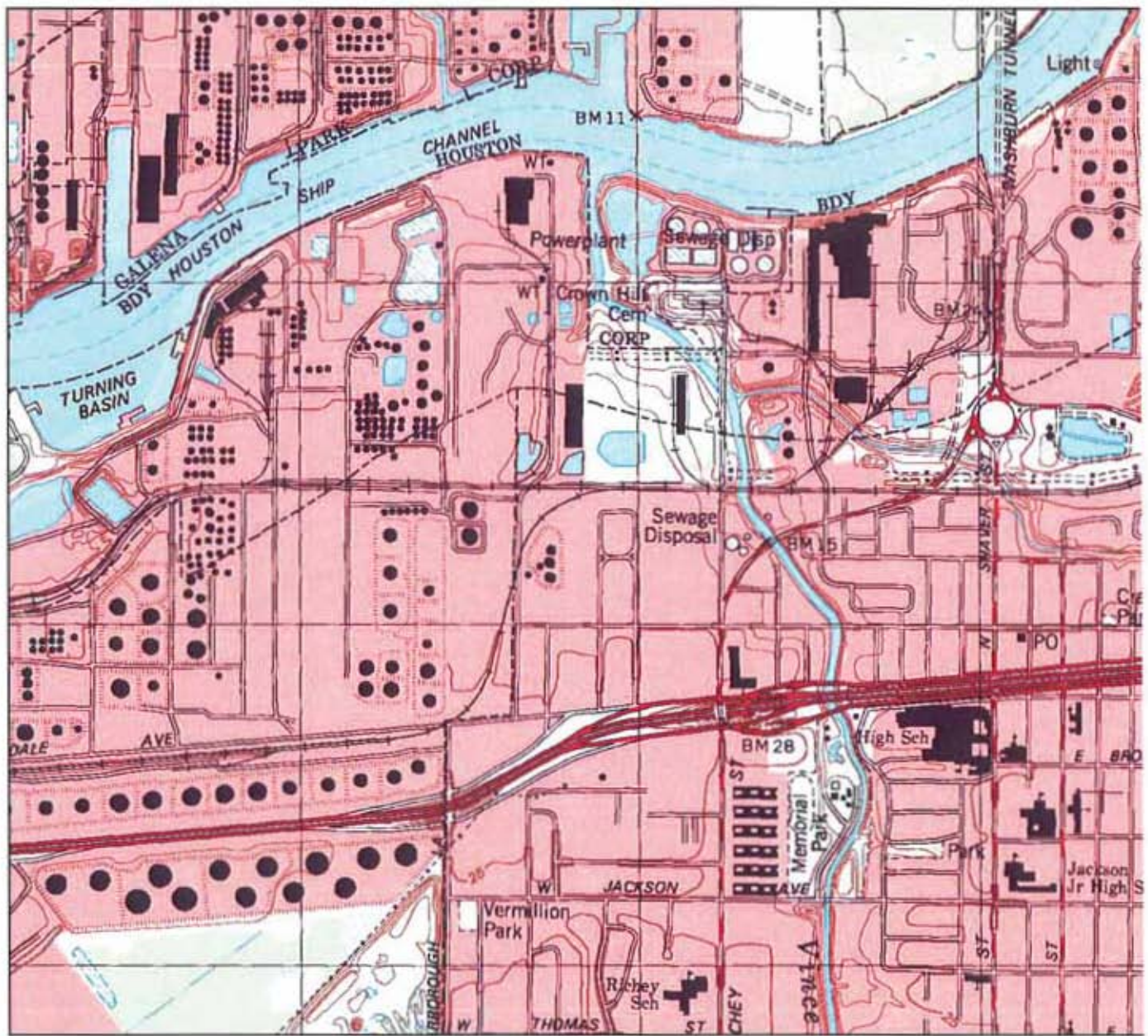
WETLANDS AND DEEPWATER HABITATS CLASSIFICATION



MODIFIERS							
In order to more adequately describe the wetland and deepwater habitats, one or more of the water regime, water chemistry, soil, or special modifiers may be applied at the class or lower level in the hierarchy. The farmed modifier may also be applied to the ecological system.							
Water Regime			Special Modifiers	Water Chemistry			Soil
Nontidal	Saltwater Tidal	Freshwater Tidal		Coastal Halinity	Inland Salinity	pH Modifiers for all Fresh Water	
A Temporarily Flooded	L Subtidal	S Temporarily Flooded-Tidal	b Beaver	1 Hyperhaline	7 Hypersaline	a Acid	g Organic
B Saturated	M Irregularly Exposed	R Seasonally Flooded-Tidal	d Partly Drained/Ditched	2 Euhaline	8 Eusaline	t Circumneutral	n Mineral
C Seasonally Flooded	N Regularly Flooded	T Semipermanently Flooded-Tidal	f Farmed	3 Mixohaline (Brackish)	9 Mixosaline	i Alkaline	
E Seasonally Flooded/ Saturated	P Irregularly Flooded	V Permanently Flooded-Tidal	h Diked/Impounded	4 Polyhaline	0 Fresh		
F Semipermanently Flooded			r Artificial	5 Mesohaline			
G Intermittently Exposed			s Spoil	6 Oligohaline			
H Permanently Flooded			x Excavated	0 Fresh			
J Intermittently Flooded							
K Artificially Flooded							

Reference 33:

United States Geological Survey, Topographical Map for Pasadena, Texas, 1995, 1 page.



0 0.5 Mi
0 2000 Ft

Map provided by MyTopo.com

Reference 34:

Federal Emergency Management Agency. FEMA Map Service Center. 3 pages.



Definitions of FEMA Flood Zone Designations

Flood zones are geographic areas that the FEMA has defined according to varying levels of flood risk. These zones are depicted on a community's Flood Insurance Rate Map (FIRM) or Flood Hazard Boundary Map. Each zone reflects the severity or type of flooding in the area.

Moderate to Low Risk Areas

In communities that participate in the NFIP, flood insurance is available to all property owners and renters in these zones:

ZONE	DESCRIPTION
B and X (shaded)	Area of moderate flood hazard, usually the area between the limits of the 100-year and 500-year floods. B Zones are also used to designate base floodplains of lesser hazards, such as areas protected by levees from 100-year flood, or shallow flooding areas with average depths of less than one foot or drainage areas less than 1 square mile.
C and X (unshaded)	Area of minimal flood hazard, usually depicted on FIRMs as above the 500-year flood level. Zone C may have ponding and local drainage problems that don't warrant a detailed study or designation as base floodplain. Zone X is the area determined to be outside the 500-year flood and protected by levee from 100-year flood.

High Risk Areas

In communities that participate in the NFIP, mandatory flood insurance purchase requirements apply to all of these zones:

ZONE	DESCRIPTION
A	Areas with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. Because detailed analyses are not performed for such areas; no depths or base flood elevations are shown within these zones.
AE	The base floodplain where base flood elevations are provided. AE Zones are now used on new format FIRMs instead of A1-A30 Zones.
A1-30	These are known as numbered A Zones (e.g., A7 or A14). This is the base floodplain where the FIRM shows a BFE (old format).
AH	Areas with a 1% annual chance of shallow flooding, usually in the form of a pond, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Base flood elevations derived from detailed analyses are shown at selected intervals within these zones.
AO	River or stream flood hazard areas, and areas with a 1% or greater chance of shallow flooding each year, usually in the form of sheet flow, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Average flood depths derived from detailed analyses are shown within these zones.
AR	Areas with a temporarily increased flood risk due to the building or restoration of a flood control system (such as a levee or a dam). Mandatory flood insurance purchase requirements will apply, but rates will not exceed the rates for unnumbered A zones if the structure is built or restored in compliance with Zone AR floodplain management regulations.
A99	Areas with a 1% annual chance of flooding that will be protected by a Federal flood control system where construction has reached specified legal requirements. No depths or base flood elevations are shown within these zones.

High Risk - Coastal Areas

In communities that participate in the NFIP, mandatory flood insurance purchase requirements apply to all of these zones:

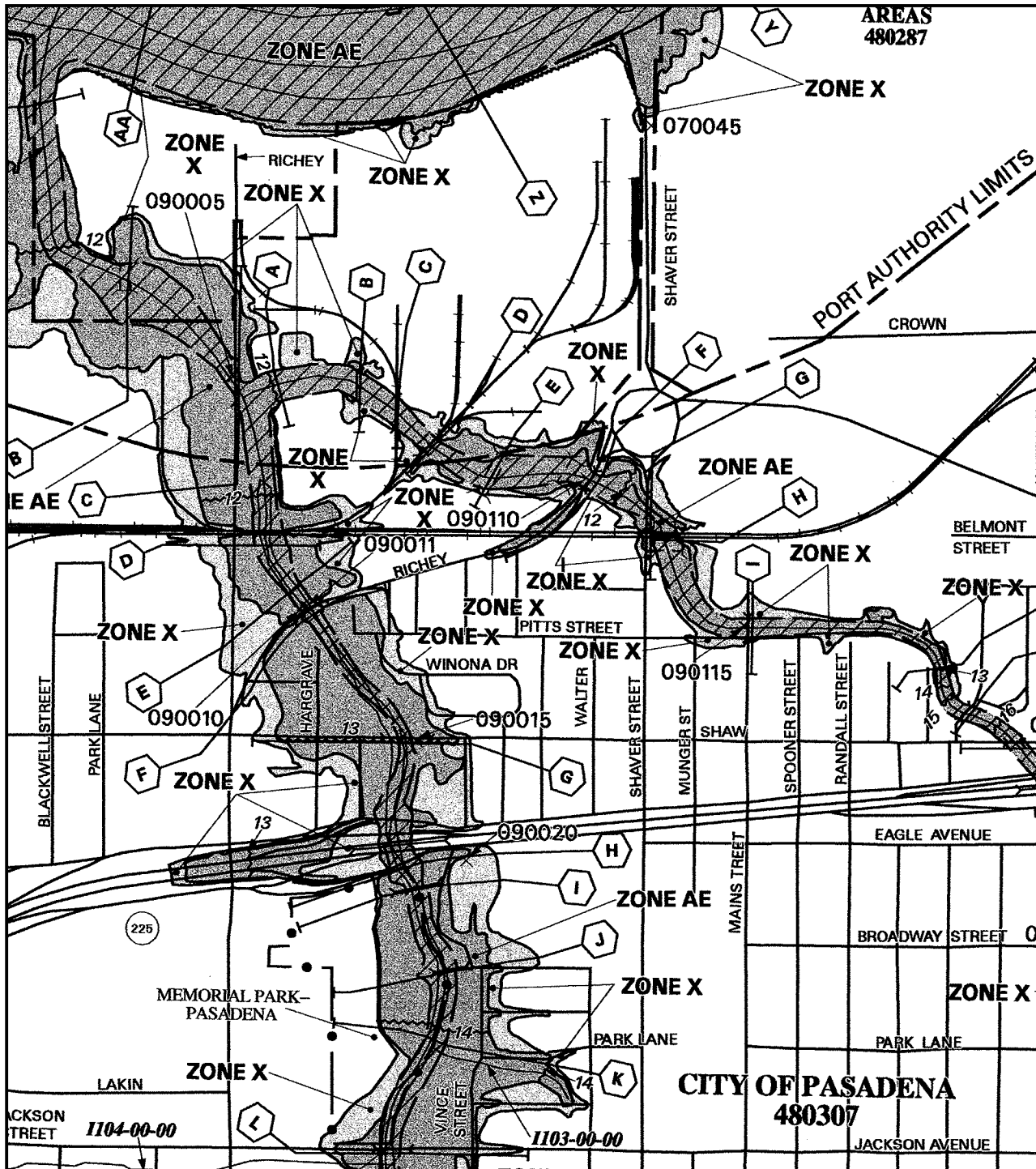
ZONE	DESCRIPTION
V	Coastal areas with a 1% or greater chance of flooding and an additional hazard associated with storm waves. These areas have a 26% chance of flooding over the life of a 30-year mortgage. No base flood elevations are shown within these zones.
VE, V1 - 30	Coastal areas with a 1% or greater chance of flooding and an additional hazard associated with storm waves. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Base flood elevations derived from detailed analyses are shown at selected intervals within these zones.

Undetermined Risk Areas

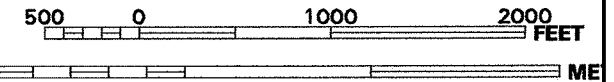
ZONE	DESCRIPTION
D	Areas with possible but undetermined flood hazards. No flood hazard analysis has been conducted. Flood insurance rates are commensurate with the uncertainty of the flood risk.

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MAP SCALE 1" = 1000'



NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0905L

FIRM
FLOOD INSURANCE RATE MAP
 HARRIS COUNTY,
 TEXAS
 AND INCORPORATED AREAS

PANEL 905 OF 1150

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HOUSTON, CITY OF	480288	0905	L
GALENA PARK, CITY OF	480293	0905	L
HARRIS COUNTY,			
UNINCORPORATED AREAS	480287	0905	L
PASADENA, CITY OF	480307	0905	L

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.



MAP NUMBER
48201C0905L

MAP REVISED:
JUNE 18, 2007

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Reference 35:

EarthTools. Available at: www.earthtools.org. Accessed on August 24, 2010. 2 pages.

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29.7148°N 95.2194°W

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[Distance](#)

Metres

5m

Feet

16.4ft



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[Distance](#)

Metres

7m

Feet

23ft



Map **Satellite** Hybrid Contour Map Contour Satellite Contour Hybrid

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Pfizer Medical Resources
Find Answers at Pfizer's Official Site For Health Care Professionals.
www.PfizerPro.com

My Story
Most of us with normal thyroid function. Read More!
www.marketam1.com

Reference 36:

Texas Natural Resource Conservation Commission. Chapter 307- Texas Surface Water Quality Standards. 144 pages.

Revisions to §307 - Texas Surface Water Quality Standards (updated November 12, 2009)

EPA has not approved the revised definition of “surface water in the state” in the TX WQS, which includes an area out 10.36 miles into the Gulf of Mexico. Under the CWA, Texas does not have jurisdiction to regulate water standards more than three miles from the coast. Therefore, EPA’s approval of the items in the enclosure recognizes the state’s authority under the CWA out to three miles in the Gulf of Mexico, but does not extend past that point. Beyond three miles, EPA retains authority for CWA purposes EPA’s approval also does not include the application the TX WQS for the portions of the Red River and Lake Texoma that are located within the state of Oklahoma. Finally, EPA is not approving the TX WQS for those waters or portions of waters located in Indian Country, as defined in 18 U.S.C. 1151.

The following sections have been approved by EPA and are therefore effective for CWA purposes:

- §307.1. General Policy Statement
- §307.2. Description of Standards
- §307.3. Definitions and Abbreviations (see item under “no action” section below)
- §307.4. General Criteria
- §307.5. Antidegradation
- §307.6. Toxic Materials. (see item under “no action” section below)
- §307.7. Site-specific Uses and Criteria (see item under “no action” section below)
- §307.8. Application of Standards
- §307.9. Determination of Standards Attainment
- Appendix C - Segment Descriptions
- Appendix D - Site-specific Receiving Water Assessments

The following sections have been partially approved by EPA:

- Appendix A. Site-specific Uses and Criteria for Classified Segments
 - See items under “disapproved” and “no action” sections below.
 - Uses and criteria for all other segments have been approved.
- Appendix E. Site-specific Criteria:
 - See items under “disapproved” section below.
 - Criteria for all other segments have been approved.

EPA has disapproved the following provisions:

- Appendix A. Site-specific Uses and Criteria for Classified Segments
 - Segment 0615 - Angelina River/Sam Rayburn Reservoir: the intermediate aquatic life use and dissolved oxygen criterion of 4.0 mg/l have been disapproved by EPA. For CWA purposes, a high aquatic life use and dissolved oxygen criterion of 5.0 mg/l are effective. All other uses and criteria for segment 0615 are approved.
 - Segment 1811 – Comal River: the revised temperature criterion has been disapproved by EPA. For CWA purposes, a temperature criterion of 90 °F is effective.

- Appendix E. Site-specific Criteria.
 - Selenium criteria for Dixon Creek (segment 0101), Linnville Bayou (segment 1304), and Heldenfels ditch (segment 2484) are disapproved. For CWA purposes, statewide criteria from Table 1 of the 2000 TX WQS are effective.
 - Zinc criteria for Kinney Bayou tidal and Jewel Fulton Canal tidal (segment 2481) are disapproved. Criteria based on a water effects ratio of 1.14 are approved in accordance with the water effects ratio provision in §307.6(c)(9). Please see link to “Water-Effects Ratios and Site-specific Criteria in the Texas Surface Water Quality Standards” on EPA’s repository for the approved zinc criteria.

EPA has decided to take “no action” on the following provisions:

- §307.3(a)(57). EPA takes no action on the revised definition of “surface water in the state” which includes an area out 10.36 miles into the Gulf of Mexico. Under the CWA, Texas does not have jurisdiction to regulate water standards more than three miles from the coast. Therefore, EPA’s approval of the items in the enclosure recognizes the state’s authority under the CWA out to three miles in the Gulf of Mexico, but does not extend past that point. Beyond three miles, EPA retains authority for CWA purposes.
- §307.6(c)(8) - Table 2. Total Hardness and pH Values Used for Determining Select In-stream Toxic Criteria. EPA considers Table 2 to be an implementation provision.
- §307(b)(1)(C). EPA takes no action on language in this provision that allows continued use of fecal coliform bacteria for effluent limits in wastewater discharge permits. EPA considers this to be an NPDES implementation provision.
- Appendix A - Site-specific Uses and Criteria for Classified Segments. EPA takes no action the public water supply use for segment 2308 - Rio Grande below International Dam. This use was included in the proposed 2000 TX WQS, but withdrawn in the preamble to the adopted TX WQS based on updated information.
- Appendix B - Low Flow Criteria. EPA considers Appendix B to be an implementation provision.

SAN JACINTO RIVER BASIN		USES				CRITERIA						
		Recreation	Aquatic Life	Domestic Water Supply	Other	Cl ⁻¹ (mg/L)	SO ₄ ⁻² (mg/L)	TDS (mg/L)	Dissolved Oxygen (mg/L)	pH Range (SU)	Indicator Bacteria ¹ #/100ml	Temperature (°F)
Segment No.	SEGMENT NAME											
1001	San Jacinto River Tidal	CR	H						4.0	6.5-9.0	35/200	95
1002	Lake Houston	CR	H	PS		100	50	400	5.0	6.5-9.0	126/200	90
1003	East Fork San Jacinto River	CR	H	PS		80	50	400	5.0	6.0-8.5	126/200	91
1004	West Fork San Jacinto River	CR	H	PS		100	50	400	5.0	6.5-9.0	126/200	95
1005	Houston Ship Channel/San Jacinto River Tidal	NCR	H						4.0	6.5-9.0	35/200	95
1006 ²	Houston Ship Channel Tidal				N/IS				2.0	6.5-9.0	168 ³	95
1007 ²	Houston Ship Channel/Bufalo Bayou Tidal				N/IS				1.0	6.5-9.0	168 ³	95
1008	Spring Creek	CR	H	PS		100	50	450	5.0	6.5-9.0	126/200	90
1009	Cypress Creek	CR	H	PS		100	50	600	5.0	6.5-9.0	126/200	90
1010	Caney Creek	CR	H	PS		50	50	300	5.0	6.0-8.5	126/200	90
1011	Peach Creek	CR	H	PS		50	50	300	5.0	6.0-8.5	126/200	90
1012	Lake Conroe	CR	H	PS		50	50	300	5.0	6.5-9.0	126/200	90
1013	Bufalo Bayou Tidal	CR	I						3.0	6.5-9.0	35/200	92
1014	Bufalo Bayou Above Tidal	CR	L			110	65	600	3.0	6.5-9.0	126/200	92
1015	Lake Creek	CR	H	PS		80	50	300	5.0	6.0-8.5	126/200	90
1016	Greens Bayou Above Tidal	CR	L			150	150	1,000	3.0	6.5-9.0	126/200	92
1017	Whiteoak Bayou Above Tidal	CR	L			110	65	600	3.0	6.5-9.0	126/200	92

The indicator bacteria for freshwater is *E. coli* and Enterococci for saltwater. Fecal coliform is an alternative indicator.

Chronic numerical toxic criteria and chronic total toxicity requirements apply to Segments 1006 and 1007.

30-day geometric mean enterococci density (colonies/100ml); the maximum enterococci density in 10% of samples in a 30-day period if greater than 10 samples or in a single sample if fewer than 10 samples are collected is 500 colonies/100ml.

Reference 37:

Texas Department of Health: Fish and Shellfish Consumption Advisory-ADV 20: Houston Ship Channel. October, 9 2001. 1 page.

TEXAS DEPARTMENT OF HEALTH
FISH AND SHELLFISH CONSUMPTION ADVISORY

ADV-20

This advisory is issued as a result of sampling of the Houston Ship Channel and the San Jacinto River in Harris County. Samples of fish taken from the Houston Ship Channel upstream of the Lynchburg Ferry crossing and from the San Jacinto River downstream of the U.S. Highway 90 bridge indicate the presence of organochlorine pesticides and PCBs at concentrations that may pose a threat to human health if consumed. These waters are covered concurrently by ADV-3, issued in 1990 due to the presence of dioxins in catfish and blue crabs.

COUNTY:	Harris
AREA:	The Houston Ship Channel upstream of the Lynchburg Ferry crossing and all contiguous waters, including the San Jacinto River below the U.S. Highway 90 bridge.
SPECIES AFFECTED:	All species of fish.
CONSUMPTION ADVISORY:	Persons should limit consumption of all fish species from this area to no more than one eight-ounce meal per month. Women who are nursing, pregnant, or who may become pregnant and children should not consume any species of fish from these waters.

This advisory shall remain in effect until rescinded or modified in writing.

Issued this 9th day of October, 2001

C. E. Bell MD
Charles E. Bell, M.D.
Executive Deputy Commissioner

Reference 38:

Texas Parks and Wildlife Department: Annotated County List of Rare Species for Harris County.6 pages.

HARRIS COUNTY

AMPHIBIANS

Federal Status State Status

Houston toad *Anaxyrus houstonensis* LE E
endemic; sandy substrate, water in pools, ephemeral pools, stock tanks; breeds in spring especially after rains; burrows in soil of adjacent uplands when inactive; breeds February-June; associated with soils of the Sparta, Carrizo, Goliad, Queen City, Recklaw, Weches, and Willis geologic formations

BIRDS

Federal Status State Status

American Peregrine Falcon *Falco peregrinus anatum* DL T
year-round resident and local breeder in west Texas, nests in tall cliff eyries; also, migrant across state from more northern breeding areas in US and Canada, winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.

Arctic Peregrine Falcon *Falco peregrinus tundrius* DL
migrant throughout state from subspecies' far northern breeding range, winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.

Bald Eagle *Haliaeetus leucocephalus* DL T
found primarily near rivers and large lakes; nests in tall trees or on cliffs near water; communally roosts, especially in winter; hunts live prey, scavenges, and pirates food from other birds

Black Rail *Laterallus jamaicensis*
salt, brackish, and freshwater marshes, pond borders, wet meadows, and grassy swamps; nests in or along edge of marsh, sometimes on damp ground, but usually on mat of previous year's dead grasses; nest usually hidden in marsh grass or at base of Salicornia

Brown Pelican *Pelecanus occidentalis* DL E
largely coastal and near shore areas, where it roosts and nests on islands and spoil banks

Henslow's Sparrow *Ammodramus henslowii*
wintering individuals (not flocks) found in weedy fields or cut-over areas where lots of bunch grasses occur along with vines and brambles; a key component is bare ground for running/walking

Mountain Plover *Charadrius montanus* PT
breeding: nests on high plains or shortgrass prairie, on ground in shallow depression; nonbreeding: shortgrass plains and bare, dirt (plowed) fields; primarily insectivorous

Peregrine Falcon *Falco peregrinus* DL T

HARRIS COUNTY

BIRDS

Federal Status State Status

both subspecies migrate across the state from more northern breeding areas in US and Canada to winter along coast and farther south; subspecies (*F. p. anatum*) is also a resident breeder in west Texas; the two subspecies' listing statuses differ, *F.p. tundrius* is no longer listed in Texas; but because the subspecies are not easily distinguishable at a distance, reference is generally made only to the species level; see subspecies for habitat.

Red-cockaded Woodpecker *Picoides borealis* LE E

cavity nests in older pine (60+ years); forages in younger pine (30+ years); prefers longleaf, shortleaf, and loblolly

Snowy Plover *Charadrius alexandrinus*

formerly an uncommon breeder in the Panhandle; potential migrant; winter along coast

Southeastern Snowy Plover *Charadrius alexandrinus tenuirostris*

wintering migrant along the Texas Gulf Coast beaches and bayside mud or salt flats

White-faced Ibis *Plegadis chihi* T

prefers freshwater marshes, sloughs, and irrigated rice fields, but will attend brackish and saltwater habitats; nests in marshes, in low trees, on the ground in bulrushes or reeds, or on floating mats

White-tailed Hawk *Buteo albicaudatus* T

near coast on prairies, cordgrass flats, and scrub-live oak; further inland on prairies, mesquite and oak savannas, and mixed savanna-chaparral; breeding March-May

Whooping Crane *Grus americana* LE E

potential migrant via plains throughout most of state to coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties

Wood Stork *Mycteria americana* T

forages in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including salt-water; usually roosts communally in tall snags, sometimes in association with other wading birds (i.e. active heronries); breeds in Mexico and birds move into Gulf States in search of mud flats and other wetlands, even those associated with forested areas; formerly nested in Texas, but no breeding records since 1960

FISHES

Federal Status State Status

American eel *Anguilla rostrata*

coastal waterways below reservoirs to gulf; spawns January to February in ocean, larva move to coastal waters, metamorphose, then females move into freshwater; most aquatic habitats with access to ocean, muddy bottoms, still waters, large streams, lakes; can travel overland in wet areas; males in brackish estuaries; diet varies widely, geographically, and seasonally

Creek chubsucker *Erimyzon oblongus* T

tributaries of the Red, Sabine, Neches, Trinity, and San Jacinto rivers; small rivers and creeks of various types; seldom in impoundments; prefers headwaters, but seldom occurs in springs; young typically in headwater rivulets or marshes; spawns in river mouths or pools, riffles, lake outlets, upstream creeks

HARRIS COUNTY

FISHES

		Federal Status	State Status
Smalltooth sawfish	<i>Pristis pectinata</i>	LE	E
different life history stages have different patterns of habitat use; young found very close to shore in muddy and sandy bottoms, seldom descending to depths greater than 32 ft (10 m); in sheltered bays, on shallow banks, and in estuaries or river mouths; adult sawfish are encountered in various habitat types (mangrove, reef, seagrass, and coral), in varying salinity regimes and temperatures, and at various water depths, feed on a variety of fish species and crustaceans			

MAMMALS

		Federal Status	State Status
Louisiana black bear	<i>Ursus americanus luteolus</i>	LT	T
possible as transient; bottomland hardwoods and large tracts of inaccessible forested areas			
Plains spotted skunk	<i>Spilogale putorius interrupta</i>		
catholic; open fields, prairies, croplands, fence rows, farmyards, forest edges, and woodlands; prefers wooded, brushy areas and tallgrass prairie			
Rafinesque's big-eared bat	<i>Corynorhinus rafinesquii</i>		T
roosts in cavity trees of bottomland hardwoods, concrete culverts, and abandoned man-made structures			
Red wolf	<i>Canis rufus</i>	LE	E
extirpated; formerly known throughout eastern half of Texas in brushy and forested areas, as well as coastal prairies			
Southeastern myotis bat	<i>Myotis austroriparius</i>		
roosts in cavity trees of bottomland hardwoods, concrete culverts, and abandoned man-made structures			

MOLLUSKS

		Federal Status	State Status
Little spectaclecase	<i>Villosa lienosa</i>		
creeks, rivers, and reservoirs, sandy substrates in slight to moderate current, usually along the banks in slower currents; east Texas, Cypress through San Jacinto River basins			
Louisiana pigtoe	<i>Pleurobema riddellii</i>		T
streams and moderate-size rivers, usually flowing water on substrates of mud, sand, and gravel; not generally known from impoundments; Sabine, Neches, and Trinity (historic) River basins			
Pistolgrip	<i>Tritogonia verrucosa</i>		
stable substrate, rock, hard mud, silt, and soft bottoms, often buried deeply; east and central Texas, Red through San Antonio River basins			
Rock pocketbook	<i>Arcidens confragosus</i>		
mud, sand, and gravel substrates of medium to large rivers in standing or slow flowing water, may tolerate moderate currents and some reservoirs, east Texas, Red through Guadalupe River basins			
Sandbank pocketbook	<i>Lampsilis satura</i>		T

HARRIS COUNTY

MOLLUSKS

Federal Status State Status

small to large rivers with moderate flows and swift current on gravel, gravel-sand, and sand bottoms; east Texas, Sulfur south through San Jacinto River basins; Neches River

Texas pigtoe *Fusconaia askewi* T

rivers with mixed mud, sand, and fine gravel in protected areas associated with fallen trees or other structures; east Texas River basins, Sabine through Trinity rivers as well as San Jacinto River

Wabash pigtoe *Fusconaia flava*

creeks to large rivers on mud, sand, and gravel from all habitats except deep shifting sands; found in moderate to swift current velocities; east Texas River basins, Red through San Jacinto River basins; elsewhere occurs in reservoirs and lakes with no flow

REPTILES

Federal Status State Status

Alligator snapping turtle *Macrochelys temminckii* T

perennial water bodies; deep water of rivers, canals, lakes, and oxbows; also swamps, bayous, and ponds near deep running water; sometimes enters brackish coastal waters; usually in water with mud bottom and abundant aquatic vegetation; may migrate several miles along rivers; active March-October; breeds April-October

Green sea turtle *Chelonia mydas* LT T

Gulf and bay system; shallow water seagrass beds, open water between feeding and nesting areas, barrier island beaches; adults are herbivorous feeding on sea grass and seaweed; juveniles are omnivorous feeding initially on marine invertebrates, then increasingly on sea grasses and seaweeds; nesting behavior extends from March to October, with peak activity in May and June

Gulf Saltmarsh snake *Nerodia clarkii*

saline flats, coastal bays, and brackish river mouthss

Kemp's Ridley sea turtle *Lepidochelys kempii* LE E

Gulf and bay system, adults stay within the shallow waters of the Gulf of Mexico; feed primarily on crabs, but also snails, clams, other crustaceans and plants, juveniles feed on sargassum and its associated fauna; nests April through August

Leatherback sea turtle *Dermochelys coriacea* LE E

Gulf and bay systems, and widest ranging open water reptile; omnivorous, shows a preference for jellyfish; in the US portion of their western Atlantic nesting territories, nesting season ranges from March to August

Loggerhead sea turtle *Caretta caretta* LT T

Gulf and bay system primarily for juveniles, adults are most pelagic of the sea turtles; omnivorous, shows a preference for mollusks, crustaceans, and coral; nests from April through November

Smooth green snake *Lioclorophis vernalis* T

Gulf Coastal Plain; mesic coastal shortgrass prairie vegetation; prefers dense vegetation

Texas horned lizard *Phrynosoma cornutum* T

HARRIS COUNTY

REPTILES

Federal Status State Status

open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive; breeds March-September

**Timber/Canebrake
rattlesnake** *Crotalus horridus*

T

swamps, floodplains, upland pine and deciduous woodlands, riparian zones, abandoned farmland; limestone bluffs, sandy soil or black clay; prefers dense ground cover, i.e. grapevines or palmetto

PLANTS

Federal Status State Status

Coastal gay-feather *Liatris bracteata*

Texas endemic; coastal prairie grasslands of various types, from salty prairie on low-lying somewhat saline clay loams to upland prairie on nonsaline clayey to sandy loams; flowering in fall

**Giant sharpstem umbrella-
sedge** *Cyperus cephalanthus*

in Texas on saturated, fine sandy loam soils, along nearly level fringes of deep prairie depressions; also in depressional area within coastal prairie remnant on heavy black clay; in Louisiana, most sites are coastal prairie on poorly drained sites, some on slightly elevated areas surrounded by standing shallow water, and on moderately drained sites; soils include very strongly acid to moderately alkaline silt loams and silty clay loams; flowering/fruiting May-June, August-September, and possibly other times in response to rainfall

Houston daisy *Rayjacksonia aurea*

Texas endemic; on and around naturally barren or sparsely vegetated saline slick spots or pimple mounds on coastal prairies, usually on sandy to sandy loam soils, occasionally in pastures and on roadsides in similar soil types where mowing may mimic natural prairie disturbance regimes; flowering late September-November (-December)

Texas meadow-rue *Thalictrum texanum*

Texas endemic; mostly found in woodlands and woodland margins on soils with a surface layer of sandy loam, but it also occurs on prairie pimple mounds; both on uplands and creek terraces, but perhaps most common on claypan savannas; soils are very moist during its active growing season; flowering/fruiting (January-)February-May, withering by midsummer, foliage reappears in late fall(November) and may persist through the winter

Texas prairie dawn *Hymenoxys texana*

LE

E

Texas endemic; in poorly drained, sparsely vegetated areas (slick spots) at the base of mima mounds in open grassland or almost barren areas on slightly saline soils that are sticky when wet and powdery when dry; flowering late February-early April

Texas windmill-grass *Chloris texensis*

Texas endemic; sandy to sandy loam soils in relatively bare areas in coastal prairie grassland remnants, often on roadsides where regular mowing may mimic natural prairie fire regimes; flowering in fall

Threeflower broomweed *Thurovia triflora*

HARRIS COUNTY

PLANTS

Federal Status State Status

Texas endemic; near coast in sparse, low vegetation on a veneer of light colored silt or fine sand over saline clay along drier upper margins of ecotone between between salty prairies and tidal flats; further inland associated with vegetated slick spots on prairie mima mounds; flowering September-November